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THE PRACTICAL TEACHER'S ART MONTHLY

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The Making of Russian Toys.

BY R. S. TOWNSEND.

(*Continued from page 518.*)

FIG. 7.

IN Fig. 7 are shown two examples of carved-wood figures belonging to the Napoleonic period, whilst Fig. 8 dates from 1850. The idea of placing this little mediæval Russian seaport town on the back of three whales is very quaint, as well as characteristic of a good deal of the Russian peasant work. It suggests at once not only the little fortified mediæval city, but the sea and the source of the trade and prosperity of the city itself—namely, the whale fishery. Looking at the photograph, I seem to be able, if I half shut my eyes, to see the sea itself washing round the base of the carving. This quality of imagination, which enters so strongly into all the Russian peasant work, and particularly into their toys, is perhaps the one thing above all others which renders it so delightful.

In no case is this quality more highly exhibited than in the Russian dolls. These are just what they ought to be—real living toys, not soulless things turned out by a machine. It does not matter whether it is the merest rag doll, or even a handful of straw with a rag wrapped round it; every one of these dolls possesses a personality of its own. If you have any of the child still left in you, as fortunately most of us have, you feel you can make a personal friend of any one of these dolls.

Take the peasant woman shown in Fig. 9, for example: you feel that not only is she the conventionalised type of the Baba or Russian peasant woman, but she is almost a living thing. There she stands with her feet together, her folded hands, and her ridiculously sad and thoughtful expression. She is thinking perhaps of that tiresome husband who will drink too much vodka, or perhaps she is, like Mrs. Gummidge, a "lone, lorn creetur," and is bewailing the fact. What a source of delight she would be to any child!

In Figs. 10 and 11 you have two quite different types of peasant from different districts; their individuality is so strong that you can distinguish them at once. The peasant and his wife in Fig. 10 are evidently holiday-making. It must be some great Church festival—Easter perhaps—and the peasants mean to have a thoroughly good time. There is quite an air of abandon about the figures. The pair in Fig. 11 look much more serious. Their somewhat holiday aspect is due to the embroidery and bright colours, which the Russian peasants always wear as a matter of course. The dolls in Fig. 10 and 11 date from 1820, and similar ones are made still. The group of dolls in Fig. 12 date from 1860, and form a ludicrous record of mid-Victorian fashions.

Among my special favourites are the straw dolls, which have been made in Russia since the pre-historic ages. The simplicity and quaintness of these dolls, which cost practically nothing to make, are most delightful. Three of them are shown in Fig. 13; they are just a bundle of straws with a few pieces of rag wrapped round them, but the effect is remarkable. You could not get more quaintness, individuality, or

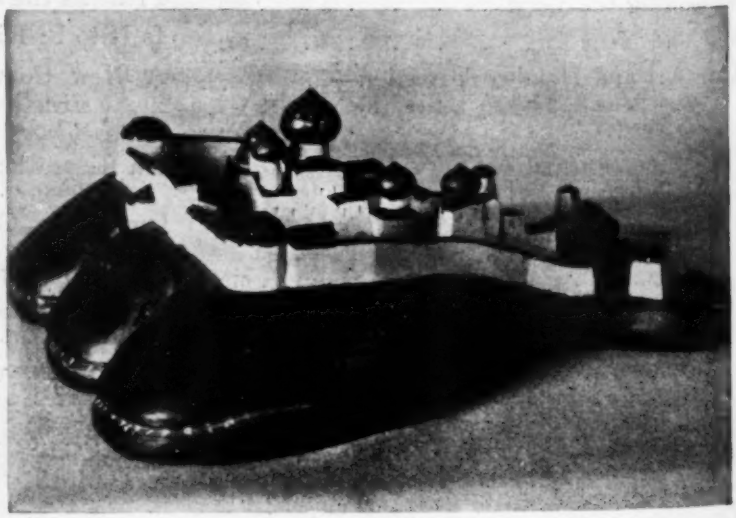


FIG. 8.

FIG. 11.

FIG. 9.

FIG. 10.

expression if each figure had cost as many roubles as it did kopecks.

Rather late in the day, perhaps, people are beginning to appreciate the very important influence playthings have upon the mental development of the child. A true toy will soon take on something of the child's own personality, and by its effect upon its imagination and affection help to stimulate its creative faculty and powers of observation. It is especially important that the toy should be more or less plastic, as it were, so that the child can mould it to some extent according to its own needs and ideas without destroying it.

Modern toys, from the wax doll to the flying machine, are so complex as to confuse and bewilder the partly-developed mind of the child in the first place; whilst they are so complete in themselves that they leave no room whatever for the play of the childish imagination and creative faculty.

They are so very complete, in fact, that the only real satisfaction the child can find is to break them, which, if it is really allowed to play with them, instead of only looking at them under supervision, it usually very soon does.

These crude but beautiful Russian toys, on the other hand, are not sufficiently complete to hinder childish fancies and imagery. They adapt themselves to the child's own ideas without any risk of being injured or destroyed, and enter into the child's very being.

FIG. 12.

FIG. 13.

The Typewriter in the Schools.

BY "OBSERVER."

LAST month I tried to indicate broadly the lines upon which a teacher might draw up a scheme of really useful English instruction which would prepare a boy or girl for intelligent office work, and at the same time do nothing but good to those pupils who will be connected with the industrial and productive branches of our trading life. In reply to several inquirers, I have pleasure in stating that Morton's *Manual of Typewriting and Office Routine* is issued jointly by the Smith Premier Typewriting Company of Queen Street, E.C., and Sir Isaac Pitman and Sons of 1 Amen Corner, E.C.

What I have to say this month about the use of the typewriter in the schools has reference to both boys and girls. The members of the fair sex appear at present to monopolise the writing machine, but this is only because they work for lower wages than youths and men. When they obtain "equal pay for equal work" there will be many more male operators, and the ladies displaced will find more opportunities for marriage. On the whole, office work is for men.

In several London schools pupils are taught the use of the typewriter keyboard by means of a small wooden dummy, of which I give an illustration. This can be

obtained at a price of four shillings and sixpence from the Taylor Typewriter Co., 74 Chancery Lane, London.

The bright boy or girl who has learnt the fingering of this dummy keyboard will be eager to manipulate the real writing instrument, and this eagerness ought to be encouraged. But how can this be done?

A few teachers of my acquaintance possess typewriters of their own, having purchased them new or secondhand—in some cases in order to supplement their professional income by taking business correspondence in hand after school hours. One or two keen and disinterested members of the profession have started several boys and girls on a commercial career by this means.

In a few large schools a typewriter is part of the ordinary furniture, and can usually be manipulated by one or more members of the staff who undertake school correspondence. Some day it will be considered quite out of place to dispatch a letter to a parent which is not neatly typed. In a school of this class something might be done in the way of using the instrument for teaching older pupils.

I can vouch for the bracing educative effect of even a little instruction in the use of the writing machine. There are few boys and girls who do not, in the first place, become fascinated with the delicate mechanism of the instrument and the way in which it "does things." The process of finding out "how it works" has always been of the highest educational value. This is the mechanical side of the matter; and many a boy of an inventive turn may be started upon a career of great usefulness by means of the usual preliminary lessons in the use of the writing machine which deal with its various parts and their uses.

It may be thought that the single machine owned by the teacher, or supplied for the use of the headmaster, will not go very far if the teacher wishes to start a class in typewriting. I have, however, seen instruction, efficient up to a point, carried out with a class of six concentrated on one machine, the pupils taking turns in performing the necessary operations; and proud they were when they could, at very slow speed, type out, with proper spacing, their own names and addresses. Half an hour of this kind of instruction per day, with relays of pupils, will serve to cover a good deal of ground in a few months. The experiment is well worth trying.

As I have already said, the subject groups readily under "English." In fact, for a top class it becomes practical English, and as such will commend itself to all readers of this ultra-utilitarian journal. The teacher who can crown his graduated scheme of work in the mother tongue with instruction in the use of the writing machine will score greatly both as an educationist and as a professional man. He will be strictly up-to-date, and will help greatly in removing the reproach of the Man in the Street, who asserts that we turn out boys and girls "unfitted for anything but making a mess of everything."

As for the effect upon his pupils, let him test the matter in a practical manner. Let him compare a small class at work on the typewriter with the same group of children engaged in writing an essay on "Industry."

First catch your hare. Enthusiasts who already possess a machine can, of course, start next week with the help of Morton's *Manual*. Others who do not own a typewriter are faced with the necessity of obtaining one. Where there's a will there's a way. Prices of first-class machines suitable for modern instruction are very high at present; but the Editor of this paper tells me that he has a scheme in process of formulation which may remove some of the difficulties in the path of the progressive and determined teacher. But what this scheme may be we shall learn, I understand, in a future issue of the *Practical Teacher*.

THE HUB OF THE EMPIRE.

OUR INTERNATIONAL COMMERCE.

A Timely Word from Prince Arthur of Connaught.

BY OUR LADY REPRESENTATIVE.

"ARE *you* Press?" was the somewhat astonished question of the Mansion House major-domo when I made my way into the Egyptian Hall equipped with the proper credentials. After a hurried glance at the rest of the "Press," I took the emphasis of the query as a compliment to my youthfulness, and smiled a satisfactory answer. But I declined to act as sole representative of lady journalism at the orthodox table, and with notebook and pencil watched the interests of the *Practical Teacher* from a more comfortable if less prominent position.

The occasion was the presentation by Prince Arthur of Connaught of the prizes awarded to successful students by the London Chamber of Commerce. Naturally I was keenly interested in what my Editor would call the "fripperies" of the affair—the beauty of the hall in which the gathering took place; the sense of power, dignity, and influence diffused by the very "menials" of the historic house where kings and emperors take a second place to "My Lord Mayor;" the careful attention to order and precedence, and the sonorous announcements of the arrival of dignitaries; and the very form of address necessitated by the presence of so many varying degrees—"Your Royal Highness, My Lord Mayor, Your Excellency, My Lords, Ladies, and Gentlemen."

Prince Arthur's lack of expert knowledge made his simple, straightforward speech all the more suitable and appealing, for your expert is always a one-sided person.

"It is not for me," he said, after a few modest prefatory remarks, "to advocate any change in the curriculum of our schools; but it seems to me that the underlying principle of our education should be first to inculcate the duties of citizenship, and, secondly, to promote the advancement and welfare of our world-wide empire."

There was something arresting about these words, which, spoken in the midst of the toiling millions of our great capital, left out of all consideration the purely selfish aim of education. Would it please the Prince to be told that John Ruskin would have delighted in his definition?

"Nothing will please me more," the Prince went on, "than to present the prizes to those who have worked so hard in the study of foreign languages. For if we would keep pace with the progress of the nations, we must not only be able to speak their languages thoroughly, but also to understand their mode of thought."

Simple but wise words again, and very necessary in the heart of the great capital, where it is so exceedingly difficult to get English clerks who can deal competently with foreign correspondence. This pointed reference to foreign languages was really the keynote of the whole proceedings; and, from what I know of commercial life in London, I can assure my readers that there is still one profession by no means overstocked—that of foreign correspondent.

May I say that the best of the students who compete for our monthly French prize would be well advised to make their French as modern and businesslike as possible. A word to the wise is sufficient.

Prince Arthur also made reference to the fact that not less than 400 city firms have announced their intention of giving preference in the employment of clerks to those

who hold the certificate of the London Chamber of Commerce; and Sir A. Spicer observed that the London County Council, in declining to send some of its pupils to the examinations of the Chamber, was inflicting an injustice upon those who, by obtaining the certificate, might secure advantageous positions in the great city. He trusted that the time was not far distant when they would obtain the co-operation of the London County Council in regard to its secondary schools.

Here we have the man of affairs in conflict with the theoretical educationist. Speaking from practical experience, I can testify to the bracing effect of preparation for commercial examinations, including those of the London Chamber of Commerce; and there is something very definitely satisfactory in the possession of a certificate which most sensible people can appreciate. The apostles of "culture," in their pursuit of a will-o'-the-wisp, are inclined to lead their followers into a bog. But this is rank heresy in an educational paper.

The L.C.C. was awarded high praise for its attention to commercial subjects in the curriculum of its evening classes, and for the excellent progress made by the pupils in these centres; and this appreciation would have warmed the hearts of many of our readers.

PRINCE ARTHUR OF CONNAUGHT.

"It is with some diffidence that I arise to address this distinguished assembly," said the Prince; and later he added frankly, "I have not much knowledge of technical education." But in spite of his modest disclaimers, those of us who are working our way clear of the doctrinaire influence in education thank him very warmly — first, for his original and high-minded statement of the true ends of scholastic training; and, in the second place, for the emphasis he laid upon the necessity for more attention to foreign languages in the curriculum of our schools and colleges.

Back to the Land.

THE EXPERIENCES OF A NOVICE.

QUIETLY but surely the winter gives place to a more congenial atmosphere, and the feeling of spring is in the air. Once more our hopes revive. We deplore our mistakes, try to forget them, and pass on. The time has now arrived when I have to make up my mind on a programme for the new year. Unlike the last, I start with my past experiences as a valuable asset. Last year the ropes were all fresh, and I had to feel my way along. Difficulties—some unusual—met me at every turn. No handbook was complete enough to meet them all. Things did not turn out as they were intended, and a certain amount of ill-luck followed me pretty closely.

The Spring Chickens.

My first batch of chickens from the incubator arrived on January 31, and another small lot from a sitting hen a few days later. However rebellious one may feel at times when things go wrong, a crowd of tiny, downy chicks has a quieting effect. They come into the world so self-contained, so able to look after themselves. All they ask is warmth and suitable food. From the start almost they commence to eat, notwithstanding that the incubator chicks have no maternal instruction. A hen, on the other hand, will break a piece of corn with her beak, and call her chicks to eat it. It was a bitter, frosty morning when they arrived; but better this than to be burnt alive, which would have happened had they come twenty-four hours earlier! One of my brooders had been repainted, thoroughly repaired, the roof tarred, and all made snug for their reception. The brooder is heated by an oil-lamp underneath the brood-chamber. As a rule, this is perfectly safe, and causes little trouble, except to trim and refill the lamp regularly. On this occasion the brooder was being heated up on the day previous to the date when the chicks were due. A strong wind was blowing during the morning. At any rate, the lamp must have exploded; for when I came in from working in the market-garden the whole thing was burnt to ashes—even the glass windows had melted. Curiously enough, no one saw it blaze, as it must have done. Fortunately I have another brooder, but such ill-luck keeps one always on tenter-hooks. You leave the brooder and its occupants at night, hoping to find them quite all right in the morning; but it is never safe to say, "It never can happen again."

Prime Pork.

I have certainly raised some good pork. This is quite a successful line. My two good-tempered pigs are no more. I quite miss their hearty appetites—their more than willingness to clear up any odds and ends: nothing ever came amiss. If specially hungry, why, they simply sat on their haunches and ate their bed. They were just over six months old, and together pulled the scale just under 34 stone. They greatly pleased the butcher; so my first attempt at producing pork was most satisfactory. The price paid was four shillings and twopence a stone—a little over sixpence a pound. This branch must now be extended, and I am hard at work on a second pigsty. Pigs have not turned out nearly such a nuisance as I expected. But they were always kept clean, and the sty was so made that its contents drained into a bucket. Not a little of the profit on pigs is their manure, which in my case will be utilised in the market-garden. Railway sleepers again form the corner-stones of the new wing of the pigsty, and the sides, as before, will be boarded with one-inch wood. I shall now be able to fatten four or five pigs at a time. Later, perhaps, I may be persuaded to keep a sow.

Planting Fruit.

The planting of fruit is being carried on in the market-garden in mild weather, just the kinds mentioned some months back—black and red currants, gooseberries and strawberries. This week I have planted fifty Boskoop Giant black currants. This variety, I am told, are less likely to be infected with the mite, or "big bud." These pests attack the buds, making their home therein. The bud is then of abnormal size, and never opens out. With a microscope hundreds of these mites can be seen in a single bud. The only remedy for a really bad

attack is to root up the trees and burn the lot! I have also planted one hundred gooseberry bushes, equally divided amongst the following varieties—Whinham's Industry, Crown Bob, Golden Drop, and Warrington. I have found the decayed turf most useful for putting round the roots when planting. At this season of the year the work seems to come with a rush, and everything demands to be taken in hand. The cropping of the market-garden requires serious consideration in order to make it a really remunerative branch. All the pig and fowl manure has been spread on the surface during the few frosty days we have had; and no doubt as time goes on the soil will become, as the professional gardener says, in "good heart." There are, however, many things on my holding besides the soil that require to be in "good heart."

OUR PHOTOGRAPHIC COLUMN.

DISH DEVELOPMENT: FACTORIAL SYSTEM.

BY THOMAS A. BRIGGS.

MOST of us have a slight swelling where the bump of curiosity is said to be located. We do like to "see the wheels go round;" and it is perhaps natural that visible development should be preferred by many amateurs. There is another reason for this preference, and that is the lesser cost of apparatus. A few dishes cost much less than the plate-tank at seven or eight shillings or the film-tank at a guinea or more. I do not think the tank system will quite supersede the older method, for with a dish you can develop one or two plates more economically than in the tank, and you can modify the density—the contrast of the negative—at will.

All that is wanted for this system is a set of three dishes, a glass measure, a piece of card to cover the dish, and, most important of all, a *good* ruby lamp. The lamp should be large and well made, with no holes or crevices through which light can escape. It is better to stint anything rather than the price of the lamp, for on this item so much depends. The sensitive plate is supposed to be unaffected by a red light. It is certainly not affected in anything like the same degree as by white light, but even with the best of ruby lamps it is only a question of time. *Any* light will fog a plate if given long enough.

I will describe the "factorial" system of Mr. Alfred Watkins. We owe a great deal to this gentleman, for he showed us how to develop accurately by a system, and abolished the haphazard ways of former times. What the exposure meter is to the exposure, so the factor is to the development. The method is simplicity itself, as the following example will show. Assume you are using "Rytol" as a developer. Its factor is 12, as shown on the box in which it is packed. You place the plate in the dish, dry, and when the seconds hand of your watch is at the even 60, you pour on the developer and gently rock the dish. Now look carefully for the appearance of any image, and note the time at which it appears—say, twenty seconds; then the plate will be correctly developed in 12 × 20 seconds, which equals 4 minutes. After the first appearance of the image the dish should be covered with the card, so that any danger of light fog may be avoided. You may remove the plate at the end of the calculated time with absolute certainty that it has had correct development. It is most difficult for a beginner to judge the density of a negative by looking through it at the ruby lamp, but this factor removes all doubt.

The length of time of development determines the amount of contrast. For instance, the factor of 12 gives ordinary results, such as would be used for landscape. For a portrait, where softer effects are required, you would have to develop for 10 × 20 seconds only (3 min. 20 secs.). If a negative of some architectural details were being made, you would require a factor of 15; and, if a black-and-white drawing was to be copied, a factor as high as 18, to get a harsh, contrasted result.

A simple illustration will make this more clear. Suppose three ladders standing in the gutter lean against a house front—one to the first floor, one to the next, and one to the third floor: the distance between the top and bottom of the first ladder is much less than that of the third one. The former will require only a third of the time to mount compared with the latter, and will be much less steep. So it is with the plate. If the development has been too short, the difference between the shadows and the high lights is not marked enough—or, in other words, the negative gives a flat print. On the other hand, if the negative has been too long in the developer, the contrasts are too great, and the resulting print appears in what is known as "soot and whitewash."

As an illustration of this fact I exposed a plate, and then cut it into three strips. The top strip, A, had sixteen minutes' development; the middle one, B, had eight minutes (this is the correct time); and the bottom strip, C, had only three minutes. The print shows the differences in thickness and contrast. If the top part of the print had been fully developed it would have been very contrasty, while the lowest part of the print is

overprinted and overdeveloped, owing to the thinness of the negative.

The following is a useful hint in calculating the time of action of the developer. If the factor will divide into 60 without a remainder, use the quotient as a divisor of the seconds elapsing before the first appearance, and call the result minutes for total time. Thus "Rytol" has a factor of 12; 60/12 equals 5. If the time of appearance is 20 seconds, then 20/5 equals 4 minutes total time. It is always best to allow the seconds hand to reach the even 60 before flowing the developer on the plate, as you then have an even minute to count from.

Do not be tempted to remove the card frequently, as the resulting negative will be brighter and cleaner the more it is kept in the dark. The dish should be rocked occasionally, both endways and sideways, to ensure even action. After the development is complete, the plate should be rinsed for a few moments in water to remove the solution, and then placed in the fixing bath. This may be the same as in the last lesson—namely, 5 oz. of hypo to 1 pint of water. It is important that one dish be always used for the fixing bath, and that care be taken never to contaminate the developer with the hypo-stained fingers. If by any chance a drop of hypo be carried into the developer, the action may stop or the negative be stained. You need not be afraid to leave the negative in the fixing bath a few minutes longer than necessary, as no ill effects will follow.

The plate must now be thoroughly washed—that is, the hypo with which the gelatine of the film is saturated must be completely removed. If it is allowed to remain, and dry in the film, the plate will deteriorate after a time. The negative may be washed in a tank with a current of water constantly flowing through it, but the outlet water must be drawn from the lowest point, as hypo is heavier than water and sinks to the bottom.

Perhaps the most perfect way of washing is to make a wooden frame on which the negative may rest by its corners, and then float this on the surface of a few inches of water in the domestic bath—if the household authorities are agreeable.

Roll and cut films require the same treatment as plates for development; but more care should be taken in handling them, as they have a most codfish-like habit of slipping out of the fingers at inconvenient seasons. Clips with spring handles are most useful when developing, as they keep the film stretched taut. In fixing, see that the film does not rise above the surface of the hypo, or stains may be caused. For washing, the films may be pinned to corks and floated in the household bath, but they should not be within less than four inches of the bottom. In drying plates it is a useful plan to place them on the sash-bar of an open window, while films may be hung by means of pins on to the edge of a shelf, or fastened on a line with little clips.

Finally, I hope you will try the factorial system, for it takes the beginner by the hand, and leads him away from those many pitfalls which hitherto have been so deep and so frequent.

Words to the Wise.

THE three days' Conference of London County Council teachers, held in the Birkbeck College, was fruitful in suggestions for the progressive teacher.

Educational Experiments in Schools.

Probably the most interesting and helpful sessions of the Conference were those which were devoted to the consideration of various educational experiments which have been attempted in selected schools during the past year.

Mr. B. Lewis, assistant-master at the Old Castle Street School, in the course of an account of a combined scheme of history and geography adopted as an experiment in the school with which he is connected, said that, unlike the self-contained subjects arithmetic and the sciences, history was amorphous, vague, and shifting, so that clear ideas could be focussed not by wearisome reiteration of a few bald facts, but by many converging lines of association. Thus, European history and local history had been pressed into service, and geography was only a part—albeit a very important part—in the general scheme of correlation. In the history course he adopted the chronological method in preference to the concentric, owing to the failure of the latter to emphasise growth and development. In order to realise all its potentialities as an educative medium, history must be made of living interest. Present knowledge, whether casual or systematic, was used as a stepping-stone to the past.

This method of contrast was consistently employed throughout, and in this way could be attained the highest results of history teaching—namely, the cultivation of historical feeling. By this was meant the desire to trace things back to their source by bringing to bear the practical imagination, which reconstructed its images from the elements of the living world.

A Syllabus.

For the purpose of exposition geography was divided into three sections—Great Britain, Europe, and the British Dominions. The geography of each European country was associated with that period of its history where it most closely touched England. Like the geography of Great Britain, that of Europe was distributed over all the standards, and at the same time its integrity as an independent subject was maintained. The first group of lessons on India was placed, like America, and for similar reasons, in the eighteenth century. This included the physical features, the East India Company and the first settlements, the struggle between Dupleix and Clive, and the battle of Plassey, which ensured British supremacy. The next group, which fell between 1760 and 1805, dealt with the development of political power associated with Hastings, Cornwallis, and Wellesley.

The course for Standard VII. covered the Indian Mutiny, the existing unrest, and the latest industrial development, and concluded with a lesson on the present-day problem on the Western Indian frontier. Both Australia and British South Africa belonged also to the work of this class, as their period of growth fell within the nineteenth century. The early history of both countries, as well as that of the East India Company, recalled the fact that the Dutch were there before the English. The sequence of lessons on Australia presented no difficulties. As in other cases, physical features came first; then the history of discovery and political

development; the establishment of the Commonwealth; and, lastly, the industries. The presence of the Boers in South Africa necessitated a modification of the preceding order. The physical geography was followed by the story of the early days, quarrels with the Boers, the great trek, and the discovery of gold, which indirectly caused the outbreak of the last Boer war. A lesson was then given on the Parliament of United South Africa. As regards the rest of Africa, the British occupation of Egypt and the Congo atrocities included what was essential; while the Russo-Japanese War introduced in a very vivid manner the salient facts concerning the balance of power in the China Seas. The method adopted will probably be best illustrated by the syllabus for a particular period.

THE TUDOR PERIOD.

Lessons 1 to 7.—The general ignorance of the people; the invention of printing; the discovery of America; the fall of Constantinople and the dawn of a new awakening.
1. Italy: its commerce in the Middle Ages.
2. Danube and Eastern Europe generally.
3. Constantinople and the Turks.
4. Continents of the world and some sea routes—to prepare, by way of contrast, for Lesson 5.
5. Ignorance of world's continents and discovery of America.
6. Printing.
7. The people become less ignorant.

The general thread that runs through the Tudor Period is the religious struggle in Europe and England. In the time of Elizabeth it is connected with the struggle for lands and markets.
8. Modern principle of toleration—to prepare, by way of contrast, for Lessons 9 and 10.
9. Martin Luther enlarges the general idea of opposition to the Pope, etc.
10. Henry the Eighth and the Catholic Church.
11. Suppression of the monasteries.
12. England becomes Protestant.
13. Iberian Peninsula—introductory to Lesson 15.
14. South America.
15. Philip the Second of Spain: his vast resources.
16. England under Elizabeth becomes finally Protestant.
17. Sir Thomas Gresham; the spirit of commerce.
18. Maritime adventures: economic and national.
(*a*) Hawkins and Drake; (*b*) Frobisher.
19. Why Philip the Second sent the Armada.
20. Amusements in the time of Elizabeth.

PICTORIAL AIDS TO THE TEACHING OF GEOGRAPHY.

This was the subject of an admirable paper by Mr. E. Thomas of the Rotherfield Street School. He exhibited pictures and diagrams illustrating routes, commercial centres, seaports, productions, imports, and industries of the British dominions and various other countries. Many of these had been obtained gratuitously from the various colonial agencies, shipping firms, and railway offices. He said truly that children were passionately fond of pictures, and that this method of instruction not only secured the attention and interest of the children, but supplied their mental faculties with appropriate links of association. Children read pictures as we read books, and by means of models and pictorial representations, clearer, deeper, and more lasting impressions are made in the minds of children than can be obtained by the ordinary methods of giving such lessons. The chief aim of this excellent scheme was to implant knowledge by means of pleasant instruction, in order to assist in giving the children an insight into the great industries of their own and other countries, whilst at the same time giving them an intelligent knowledge of the world, so as to show how one country came to understand another by means of the interchange of commerce. In this way international enmity gave place to peaceful rivalry.

The necessity for an immense mercantile navy for the maintenance of our commercial supremacy, and of a strong navy for its protection, were illustrated by means of pictures of some of the great liners, and also of battleships, cruisers, gunboats, etc. In order to show how it was necessary to protect our ships, not only against interference by foreign powers, but as far as possible against the perils of the deep, there were charts and illustrations of lighthouses, lightships, buoys, etc.

Happy boys to be taught by such a teacher and by such a method! This association of pleasure with instruction is the best incentive to attention, and as a result the knowledge which the teacher is most anxious to impart is easily acquired.

INDIVIDUAL WORK IN LARGE CLASSES.

This was the subject of an experiment described by Mr. A. G. Gawler of Gloucester Road School.

Mr. Gawler stated that individual work was impossible only for those who had not given the method a trial. This experiment had been tested with 200 boys, grouped in classes of about 45, and confined to Standards V. to VII.

He stated that in any grade of fifty children the working capacity varies by as much as 3 to 1, yet teachers still attempt to produce the same intellectual gloss on each child in the same time. Regardless of such factors as heredity, home influence, and innate ability, all scholars were required to work through the same item of the syllabus on the same day, at the same hour, at a rate fixed by that imaginary being the average child. In such a system the brightest children are underworked and the dullest wrongly worked. We have confused talk with work, and have not yet realised that the school is the educational workshop of the child, and the teacher is the managing director. The oral lesson should be followed by individual work, otherwise it is educationally of little value.

Drawing.

The new spirit which has breathed life into the drawing lesson, and which has resulted in such an outburst of spontaneity and enthusiasm, is wholly favourable to individual work.

The more the work is centred in the child instead of in the class the keener will be the interest and the better the result. Why should fifty members of a class all be engaged in painting at the same time, or in modelling, or drawing with pencil or crayon? Why should they be invited to make a simultaneous study of a misplaced coal-scuttle, kettle, or saucepan? It was his experience that a boy's choice ran first to natural objects—twigs, flowers, fruits, feathers, and living creatures—followed by objects of personal interest—workshop tools and architectural features.

In the lesson each boy is a law unto himself, choosing his own object and his own medium. Each carries his own lead pencil, and most of them own a box of water colours. As a result, more voluntary work is done in the evenings, both at home and in the local art gallery. The master is all the while merely the inspirer, the feeder of the flame of enthusiasm.

Spontaneity, initiative, choice, and self-government are the fundamentals in all individual teaching. One of the advantages of such work is that there is no slack time. When one task is completed the child naturally starts another.

Practical Science.

The science syllabus consists of about two hundred problems in experimental physics. Sufficient apparatus is provided to give from one to fifteen variations of each problem, all of which have been worked through by the master in charge, who keeps a key for reference. Numbered sheets, on which the problems are briefly stated, are distributed to the children, and each boy is left to interpret the problem himself and devise his own plan of attack. All apparatus in common use is kept close at hand, any special apparatus being requisitioned by the head boy of each bench, who is usually informed a lesson in advance. The actual amount of apparatus needed for fifty boys is less than that required for twenty boys taught collectively, as when special apparatus is required one pupil has finished with it before another requires it. To this initial economy must also be added the economy in storage-room and supervision. Organisation is simplified to the extent that a pupil of one year works equally well with those of any other year. An absentee is not plunged into difficulties on his return: he merely picks up his tools where he put them down. In all measurements of length, area, and volume, British and metric units are employed; so the lad is able to check his own results. In constructive work the extent of an error is easily seen, and the lad tries to remedy his blunder. In this way he develops confidence in himself, which is soon manifested both in his manner and in his speech.

With some lads progress at first seems slow, probably because they miss the illicit props of their neighbours.

Arithmetic.

The scheme of arithmetic is based on the practical science work. Here, again, the boy who can travel express is not pulled up at every station. Many problems have to be worked practically—such, for example, as those concerned with the laying of a piece of carpet or a piece of linoleum. The plan is drawn to a suitable scale, and a businesslike estimate of the length of linoleum of market width is required. It is then cut out of brown paper, and with the help of a little gum the child proceeds to lay it. He is thus able to see and determine any error in his original estimate.

Nature Study.

This thrives only on individual work. When a child discovers a thrush's nest for the first time, and informs you that the inside looks like the inside of a cocoanut shell, he is linking the memory of a past joy with the joy of the present.

In conclusion, the lecturer stated that the path of individuality is the path of least resistance, and that the boy who journeys along it lifts himself to a higher plane of intellectual life, conduct, and happiness. The chairman, Sir Alfred Keoch, rector of the Imperial College of Science and Technology, was of opinion that any system which would provide for the rapidly progressive boy who was capable of outstripping his fellows ought to receive the earnest attention of all teachers. The average standard of education was not to be settled by the average intellect, and he was of opinion that here lay the flaw in our present system.

He felt strongly that there was too much moulding of youth on one model, and there was a considerable danger of our losing our individuality and the power of initiative in our mistaken efforts to secure uniformity of type.

Experiments in Dramatic History.

BY FRED. E. MELTON, SHENLEY, BUCKS.

(*Continued from page 576.*)

THE NORMAN KINGS.

SUMMARY.

DURING William the First's reign a book was compiled which showed exactly the property of every landowner in England, together with the number of serfs or labourers each person employed. In it was entered the number of acres of farm lands, tillage, pasturage, and forest, with the streams watering the estate, the number of ploughs used, the stock on the land, and many other details, so minute was the examination through which each thane or freeman passed. Thus, with the Normans as masters, the Saxons practically became slaves, and the Domesday Book was the seal of their bondage.

The death of William occurred after he had reigned twenty-one years (1066–1087), during which time he had to meet and put down with no gentle hand the armed opposition of many Saxon thanes.

His son, called William Rufus, on account of his red face, came to the throne, but with the parental hatred of opposition he had not inherited his father's powers of government. Where the father had been firm when wisdom taught firmness, the son was wilful when obstinacy taught wilfulness.

His reign (1087–1100) was one long tale of cruelty and oppression; and when he met his death whilst partaking in his favourite pastime—hunting—no sorrow was shown at his passing.

The New Forest in Hampshire was preserved during his father's reign, and villages, hamlets, and cottages were ruthlessly pulled down and the inhabitants rendered homeless, so that the king might hunt over a portion of land specially reserved for his sport. Strange that death should overtake Rufus where his father had caused the death of so many others.

Play VII.—The Death of Rufus.

CHARACTERS.

WILLIAM RUFUS, the king; SIR WALTER TYRELL, the king's favourite; A MONK from the Abbey at Gloucester; an ATTENDANT of the Bedchamber; PURKESS, a charcoal-burner; barons, knights, men-at-arms, etc.

SCENE I.—THE ROYAL BEDCHAMBER AT MALWOOD KEEP, NEAR THE NEW FOREST, HAMPSHIRE. TIME, 1100 A.D.

[*The room is furnished with a low couch and chairs of a Norman pattern. The doors are concealed by tapestry, and a fire is burning on the hearth. William is lying on the couch asleep. Suddenly he wakes, jumps to his feet, and then sinks back upon the bed.*

William. [*Calling loudly*] Ho, there! lights! lights quickly!

Attendant. [*Entering at once with lighted torch*] My lord! my lord!

William. [*Waving his arm impatiently*] Put down the light and listen. [*Attendant places torch in a socket fastened to the wall*] Fetch Sir Walter Tyrell to me, for I would talk with him. Now go, and go quickly.

Attendant. [*Bowing*] On the instant, my lord. [*Goes out.*

[*William puts his head down between his hands, and sits in a dejected attitude until Tyrell enters carelessly and with some amount of noise. Then the king sits up and faces him.*

Tyrell. Why this disturbance in the middle of the night, my lord? Methinks that if we are to hunt on the morrow a good sleep should be necessary.

William. [*Moodily*] Ay, Walter, but sleep comes not always to command. Strange fancies have been with me this night,

and but a few minutes ago their horrors called me from my sleep in terror [*putting his hands before his eyes*]. I will no longer remain alone. Stay with me till dawn, for in the dancing flames I see strange sights.

Tyrell. [*Seating himself on one of the chairs and laughing*] It is not like you, my lord, to be troubled with fancies after such a merry night as we have passed; though, indeed, this forest of yours that lies so close should be well peopled with ghosts to make you think.

William. [*Starting up and moving hastily towards Tyrell*] Silence, Walter; you make me shiver with your wild talk. My hunting-ground had to be made, and if a few men were slain in the making, what difference does the death of a few miserable peasants make when they stand in the way of a king's sport?

Tyrell. None, my lord, except to them.

William. [*Walking to and fro*] But let us talk of the morrow's sport, for only thus shall I shut out the wild fancies which during this night have filled my mind.

Tyrell. To the chase, then, my lord, and to thoughts of the noble stag, which in a few hours we shall be hunting to his death.

[*He pulls two chairs to the fire, and when the king is seated he sits also, and they commence to talk quietly together.*

SCENE II.—OUTSIDE MALWOOD KEEP BEFORE THE HUNT.

[*Tyrell and other nobles are standing in a group with their squires close by tending the horses. The king enters, carrying a bundle of arrows. All stand bareheaded, whilst Tyrell goes forward to meet the king.*

Tyrell. [*Bowing*] 'Tis a finer morning than the night gave us reason to expect, my lord.

William. It is to be hoped that our sport will give us more pleasure, Walter.

Tyrell. I hope so too, my lord; for, truth to tell, it was but a poor beginning to what should be a most happy day.

William. [*Walking towards the others*] A happy day it shall be; and, as a reward for your dull hours last night, I would give you these new arrows, which I bought but this morning for the day's amusement [*stopping and handing them to Tyrell, who bows as he receives them*]. Shoot straight with them, I beseech you, Walter, for it must be a noble stag brought to its knees with the king's gift [*moving again towards the group*].—To horse, my friends, for the day draws on, and the sport will not wait.

[*The squires busy themselves with their tasks as the nobles go towards the horses.*

Monk. [*Rushing in and kneeling before the king*] My lord king!

[*All stop and turn towards the king.*

William. [*Impatiently*] What do you want, fellow? Stand aside, or I will ride you down, monk or no monk.

Monk. [*Quietly*] My lord, I am the bearer of a message from St. Peter's Abbey.

William. Hurry, fool, and tell it; for I am impatient, and wish to be gone.

Monk. [*Rising, and speaking slowly, with head bent*] One of the holy fathers dreamed last night that you would stand in danger to-day. He saw you lying dead; and he implores you for the sake of St. Peter of Gloucester that you go not forth.

Tyrell. [*Stepping forward*] This is strange, my lord.

William. [*Laughing uneasily*] Peace, Tyrell! Hunting I will go, whether messengers come or not. On that I am determined [*turning to the monk, and throwing a handful of coins towards him*]. Here, fellow, take this money to the holy fathers, and tell them that William the king wishes them better dreams; for, whatever they be, I go to my sport.

Tyrell. Lead on, my lord, or the day will be gone.

William. Yes; enough time has been wasted.—Follow on, nobles all! [*They all pass out, leaving the monk standing alone, looking after them.*

SCENE III.—A GLADE IN THE NEW FOREST.

[*Children are standing irregularly to represent the trees. Enter Tyrell and William alone, following a stag. The king suddenly points ahead.*

William. Shoot, Tyrell, or he will be gone.

Tyrell. 'Tis indeed a noble stag to bring to its knees with the king's gift. [*Fits an arrow to the string and shoots, the arrow hitting the king. He falls to his knees and then rolls over sideways, and after moving once or twice lies still. Tyrell runs to him and lifts his head. The king falls back.*] My lord! my lord! What have I done? What shall I do? [*Stands up and looks cautiously round.*] If I return they will not believe 'twas an accident, and my own life is too sweet to give away for such as Rufus was. France must be my home, and I must fly at once.

[*Disappears among the trees.*

Enter PURKESS, *the charcoal-burner, with his cart. Seeing something on the ground he goes towards it.*

Purkess. Hullo! what's this?—rich clothes, rich jewels, and [*turning the body with his foot*] dead as a dog. [*Starts back, and then bends close, only to stand suddenly upright.*] Why, it's Rufus the king! Well, he was no good alive; I must see whether I cannot make something of him now he is dead. [*Lifts the body and puts it into his cart.*] Come along into my cart, and that's a better place than you deserve. I wonder how many owe their death to you over the making of this forest, and now you're dead in it yourself. Well, go on, old horse; we are carrying good tidings to many a home in England to-day, for the Red King will reign no more.

[*Passes slowly out.*

Blackboard Sketch.

The Normans conquered England.
1. Brought the Saxons under entire subjection.
2. Stopped the system of election of kings.
3. Introduced the Feudal System.
4. Compiled the Domesday Book.

FOLLOWING THE LEAD.

[A short time ago the Editor received two photographs, from which the illustrations on the next page have been made, along with the information that the little actors were boys of Standard III. B of Newport Maunder Council Schools. A request for further information brought the following interesting description.]

THE lesson—for it was just a graphic lesson—was taken in the ordinary classroom, divided from the large hall by a sliding screen. The hall was used as the "wings," where the boys taking the chief characters waited their cue.

It was decided beforehand that this special lesson must not interfere with any of the other work of the class (Standard III. B), and so such apparatus as was used was made in the evenings and brought to the school on the morning of the lesson. No special apparatus was used beyond that sketched out in the illustrations to your September article; and to show the simplicity of the whole business, it may be mentioned that the Druid's golden sickle was made up of a crescent-shaped piece of yellow cardboard fastened to a ruler with two drawing-pins, and his long, flowing beard was the result of a slight operation on a penny mask.

In this particular case the wording of the sketch was very much edited, for boys of this age (nine to ten) become perturbed and unnatural when they have to say words not in their everyday vocabulary. Even with these alterations some of the boys seemed "stagey" in their utterances; and I am not so sure that, as far as the immediate result of this sort of work is concerned, a little juvenile slang, introduced *by the speaker*, is of any great harm. However, this will become more patent, perhaps, in the next sketch.

The boys repeated their parts after the teacher. This was an experiment, for it was thought that if they could overcome the rigidity due to the presence of authority, the said authority might have a somewhat wholesome, restraining influence, useful at times. On the whole this proved a success, marred, of course, by an inevitable stiffness of delivery. In the next sketch the boys will learn their parts at home, and we shall then be able to judge which is the better procedure for these young minds.

The whole class of fifty boys took part. In the first part (before the coming of the Romans) the majority of the boys were Roman soldiers, kept in order by the

THE BRITISH HUNTERS' RETURN WITH THE WILD BOAR.

standard-bearer, who combined the offices of that dignitary with those of a centurion. In the second part (scene in a British village) these boys became British men and women, with stone axes, "flour-mills," etc. In this way everybody was interested, and the effect can be imagined when, for instance, the Druid invoked the blessing of the gods on the departing defenders of Britain, who were vainly detained by their heartbroken wives.

The blackboard summary was provided by the boys, who had gained a clear idea of the issues involved, and stated these issues as answers to a few simple questions. A composition lesson and sketches of the standard followed.

One could fill pages describing the incidents; but it is sufficient to know, as a certain fact, that to these boys Julius Cæsar and his Romans, Caractacus and his Britons, are no mere text-book names, but men—men who have lived, and, what is more, lived where these very boys are living now; for the second part of the play—the British scene—was supposed to be enacted in St. Julian's Wood, only a mile from the school.

To conclude, teaching history "by doing" is an established method so far as one teacher is concerned.

THE DIALOGUE—CÆSAR AND GENERAL COMMIUS.

N.B.—The Editor will be glad to hear of any further experiments in dramatic history teaching, and to receive photographs if possible. Any illustrations used will be paid for.

Far and Near.

INTERESTING ITEMS DRAWN FROM VARIOUS SOURCES.

The Utility of Esperanto.

As I noted in last month's issue, the study of Esperanto is undoubtedly making rapid strides, and is taking the first steps towards accumulating a literature of its own. That the various sections of mankind will ever abandon their national languages in favour of a common tongue is extremely improbable, though you never can tell. Probably certain racial differences of physical formation in the vocal organs may check the movement, though we could always agree to drop our *th* in deference to Germany.

There seems no good reason, however, why so simple and admirable an adjunct to the languages of the world as Esperanto undoubtedly is should not become much more widely used than at present, and form what might be called a kind of verbal shorthand. With increased knowledge, its remarkable utility as a means of communication becomes much more apparent.

Up-to-date business firms, with customers among the educated classes of all nationalities, are already appreciating its value and using it for their announcements. It is refreshing to be able to say that we are ourselves leading the way, and that an English firm (Messrs. Burroughs, Wellcome, and Co., of tabloid fame) have issued a booklet in Esperanto giving information with regard to their products. It makes weird reading, and we commend it to nervous patients who do not know what is the matter with them, and who will at least forget themselves, and possibly their ailments, in their efforts to trace their physical shortcomings in the new *lingua Franca*.

The Antiquity of Shorthand.

"There is no doubt that shorthand connotes Pitman," says *T. P.'s Magazine*. "It is quite impossible to think of the one without the other at once jumping into one's mind. Yet shorthand is 'as old as the hills'—nearly. Three centuries before the Roman power arose in Italy, whilst Rome was still but a river port on the Tiber, the Etruscans ruled in the peninsula—a nation great in agriculture and in war, a people who did things but found no time to write and preserve records of them, for we have but five inscriptions of more than twenty words. The literary remains of the Etruscans consist mainly of memorial inscriptions upon their tombs, and all those which have survived are believed to be in phonetic shorthand. So that phonetic shorthand is at least three thousand years old." This sanctifies the subject for your doctrinaire educationist, though he will probably demand that for training purposes we must, in our schools, teach the shorthand of the memorial inscriptions and not the vulgar modern equivalent. Soon we shall quote, not from the poets but from Cleopatra's Needle.

The Correction of Common Mistakes.

For myself I object to correcting mistakes which but for a mistaken teacher might never have been perpetrated. But those who employ the method may find the following little poem useful in class work.

"Said Lucy: 'Now meet me at eight;
Don't forget, and make us both leight.'
Said Keight: 'Yes, I'll come sure as feight.'

"Said Lucy: ''Tis quite cold enough,
I think, to be using my mough,
The wind blows so cold on the blough.'

"But soon did this poor maiden sigh:
She caught a bad cold in her igh,
And she thought she surely must digh.

"Now you who have laughed at my rhyme,
And think my poor spelling a chryme,
Just learn how to spell while you've thyme."

Mrs. Clara J. Denton in February "St. Nicholas."

Where Things are Worse.

The kitchen department tells me that in the matter of provisions prices run to breaking-point. Yet they have it worse on the other side—at least, so Mr. Philip Snowden, M.P., informs us in the *Daily News*.

"The cost of food is higher than in England. I have before me the tariff of a restaurant situated in Broadway, New York. The street floor is a confectioner's shop, and the counters are used as a stand-up buffet. The first floor is an ordinary restaurant by no means of the highest class, not comparable, for instance, with a restaurant within a few yards of Piccadilly Circus, where a luncheon can be got for 1s. 6d. Here are some of the prices at this New York restaurant (I have put the prices into English money on the equivalent of 4s. for a dollar and 2 cents. a penny): Sirloin steak, plain, 4s.; ditto, with onions, 5s.; potatoes, 1s.; lamb chops, plain, 2s. 9d.; sirloin steak, extra, with French peas, 7s. 9d.; cheese, 1s.; toast, 7½d.; glass of milk, 5d.

"The increase in the prices of food to which I have referred is strikingly shown in one of the New York morning papers to-day. The bill of fare at the restaurant at the Horse Show is taken, and the prices of the same articles are totalled for this year and for 1904. Six years ago the total was $12.80, and now the same things are charged $17.85."

In London I can get soup, joint, vegetables, pudding, and coffee for one shilling and fourpence.

Poor Dog Tray.

The following useful hints, drawn from the *Animal's Friend*, might form the subject of a little class exhortation on a subject which receives too little attention in our school work:—

"Do not keep a large dog unless you can let him have exercise every day. Dogs especially crave liberty; they need a large amount of exercise. What misery, then, for an active dog to be continually fastened to a kennel! How he must long for release through the weary hours in the hot sunshine or chilly frost! If he could only speak, he would say, 'Let me loose, kind master; liberty is sweet to me as it is to you.' Exercise is more to a dog than good dinners, though the latter must not, of course, be neglected.

"The kennel should rest on four bricks to raise it from the ground, and stand facing a wall to prevent rain from beating in. Let there be a good supply of straw in cold weather. A bare kennel facing an east wind on a winter's night, with a shivering dog chained to it, is a wicked sight, and none but the cruel or thoughtless would permit such to be.

"See that there is *always* clean water for him to drink. Animals are very dependent upon us, and we may cause suffering by our thoughtless neglect or shirking of trouble."

The Sacred Cause.

The dear little dollies shown in the picture on the next page were dressed by subscribers to Messrs. Nelson's halfpenny monthly, the *Children's Paper*—in the first place, in the effort to win prizes for themselves; and in the second, to brighten the slow, sad hours of the little

inmates of several Edinburgh hospitals. We commend the idea to those of our readers who are teaching needlework according to Miss Fleming's method by dressing dollies. The above-mentioned halfpenny paper is, I happen to know, eagerly looked for in many schools and homes, and its easy competitions for the children help the work of the school to move more merrily along.

Ruined Romance.

The writer of the occasional column in *Scribner's Magazine* touches upon a matter concerning which we are all supposed to have a more or less clear opinion. At all events, the question will serve for a fireside debate when the little ones have gone to bed.

> "It appears that romance is finally dead. Of course we have heard this for several centuries; but former rumours of its death were grossly exaggerated, and the real demise has only just taken place. I heard all about it from the mother of grown daughters. The young people of to-day are without sentiment; they dance together in exactly the same spirit in which they walk, swim, and play tennis together; they never want to be alone; they go about in gangs; no one sends any one flowers; the sacred hour of afternoon tea is spent in playing auction bridge. In short, the face of Nature is changed: young men are no longer ardent and ingenuous, nor girls mysterious and elusive.
>
> "Well, I was sorry to hear it. Romance contributed a good deal to youth, in my day; and I thought it a pity that these young six-foot gods and goddesses whom I see about should grow up in ignorance. Nor must you suppose that I was so simple as to forget that I had heard the same cry from my own mother, and my grandmother too, I dare say (only both my grandmothers were dead, poor ladies, before I was born); but in those days the lament had struck me as comic; whereas now something within me says it is worth investigation—which may be age, and may be clarity of vision."

Our own contribution to the debate is that romance refuses to die—hence most of the trouble and the tears.

Where Things Differ.

Travellers in foreign lands so seldom tell us of the things that appeal to us that I have pleasure in directing

attention to Price Collier's articles in *Scribner*, entitled "On the Way to India." Here is a taste of their quality:—

> "You are supposed to carry your own bedding with you, just as you carry your own tooth-brush. In the trains—and there are very long train journeys, by slow trains, in India—in the guest-houses of the native princes, in camp of course always, and in the hotels and inns, your own bedding is a necessity. Indeed, you can scarcely carry too much in India if you wish to be comfortable. All sorts of clothing from fur coats to the thinnest linen, all sorts of hats from a cap to a pith-helmet, a spirit-lamp, a folding-table and chair, a small amount of tinned or bottled food and a supply of mineral water for the train, a large supply of linen and underclothing—for one changes often, and the laundry work is done by beating on flat stones. The changes of temperature from noon till midnight are startling. One must give up cold baths and take to tepid or hot water, and be careful,

indeed, what and how much one eats and drinks. No alcohol before sunset, and very little then, and the plainest and most nourishing food."

All this touches the spot, though Price Collier also deals in high politics and other generalities.

"Rise, Sir Jane!"

"In these days of lady mayors," says *The Lady*, "an interesting question arises as to their eligibility for knighthood during coronation year. It has been stated that the lady mayors will receive the honour equally with the man mayors; and already some witticisms have been perpetrated about the royal voice commanding 'Sir Jane' to arise. But, as the *Observer* recently pointed out, we shall not be doing anything peculiarly modern or revolutionary by knighting the woman mayors, but rather reverting to the practice of an earlier time. Not only were women knighted in England in the Middle Ages, but some were summoned to Westminster to sit in the House of Peers. Among these may be named the Lady Abbesses of Shaftesbury, Barking, Winchester, and Wilton, all in the reign of Edward the First. We are told, too, that both Mary and Elizabeth were knighted before they became queens. In Spanish history there is a most interesting case of women being knighted. During the siege of Tortosa by the Moors in 1149, the city was reduced to such a state of desolation that the men conceived the idea of killing their wives and children to save them from dying in a painful and lingering way from starvation. One of the wives, who had no mind to submit to being slaughtered for her good, collected her woman friends and offered to defend the battlements while the men made a last desperate sortie against the Moors. The sortie was successful: the Moors were driven back from Tortosa, and the gallant women all received the honour of knighthood."

Coals to Newcastle.

It is not often that extra-professional advice on school method is so sensible and up-to-date as the following, though to most of our readers the hint will be superfluous:—

> "If there is one way in which the teaching of literature has improved during the last twenty years, it has been in the way the teachers now feel it best to make their pupils learn something about dramatists. Plays, except study plays—the worst kind—were written to be acted, a fact which was entirely overlooked in the days when a class was set to 'coach up' *As You Like It* or *A Midsummer Night's Dream* out of a text-book stuffed with references to parallel passages and names of authors about which boys and girls may be excused for knowing nothing and for desiring to know less. On such a system not only was the charm of Shakespeare absolutely hidden from the youth of England, but an entirely wrong impression was created of the function of dramatic writing. The *Times* does well to say, in an article on the new development, that the best way to teach young people the meaning of a play is to let them act it. 'A class that has performed the "Casket Scene" and the "Trial Scene" from *The Merchant of Venice* under intelligent instruction will certainly have learnt something of the charm of Shakespeare.'"

Loud Cheers!

I give the following cutting with the "cheers" and other concomitants all left in, as they serve to show what poor specimens of intellectual humanity we teachers really are. Mr. G. B. Shaw was speaking at the meeting of the English Association on the matter of some agreement in pronunciation as a necessary preliminary to the teaching of phonetics.

> "Some years ago there lived in England an extremely good speaker—a speaker who spoke English in a way which was recognised as distinguished and entirely presentable. I refer to the speech of the late Queen Victoria. (Cheers.) My first impression of Queen Victoria—I being an artist writing for the stage, and depending greatly upon the beauty of speech for effect (for unless you get the music of my plays you never get the play at all, and consequently my friend Mr. Granville Barker always says to the actors, 'Remember this stuff of Shaw's is Italian opera, or you will never get it at all')—my first impression, I say, of Queen Victoria was that if she had gone all over the world her English would have been recognised at once as English in which you could deliver a speech from the throne, a judgment in the Judicial Committee of the Privy Council, a speech in the House of Commons or the House of Lords, or a sermon in Westminster Abbey—in fact, a speech which would not be a stumbling-block to you, but which would carry you anywhere. (Cheers.) Now, if you took the speech of the ordinary elementary school teacher, you would at once say that that was a man who could not be made Lord Chancellor, and you could not allow him to speak in the House of Commons or the House of Lords. He could not even carve his way to a decent career as an auctioneer. (Cheers and laughter.)"

The speaker went on, to the accompaniment of more cheers, to recommend Mr. Forbes Robertson as the model. We have no quarrel with the advice, but fear most of us will have to fall back upon phonograph records. It is rather like advising us all to buy the Cullinan diamond.

David's Vocabulary.

David's mother has taken the trouble—it is a pleasant way that mothers have, bless 'em!—to make a record of the young hopeful's vocabulary till three years old, and has published it in *Child Life*. David's people are vegetarians, so that "beef" and "mutton" do not appear, which is surely an argument against vegetarianism. The word "bridge" does appear, and we hope it is the right kind of bridge. Words such as "muddle" and "choking" are full of poignant suggestion. "Mrs. Ewing" appears, but not "Alice." There is no Tom of *Water Babies* fame, unless he appears as "Tommy," which seems incongruous. The rest of the list is full of suggestion, but we have no space for more.

NATURE STUDY.

Mr. G. G. Lewis is a recognised apostle of open-air Nature study, and his knowledge is made apparent in *A Scheme of Nature Study, and How to Work It* (issued by Sir Isaac Pitman and Sons, 1s. 6d. net). Typical courses and specimen lessons are given, and these should be studied—not, we hope, with a view to being slavishly followed, but in order to suggest ideas. There are a few helpful sketches, but why is it necessary to reproduce photographs which teach us nothing? On the whole, it is a book that the Nature student should get and use.

Messrs. Blackie have dished up for us some of the notes which originally appeared in the Newton "Nature Handbooks," and these are issued as *Teachers' Notes on Nature Study: Plants and Animals*. These notes cover an ample field, ranging from the cat to the shark, from the onion to the primrose, and necessarily contain a large amount of information. There are a very large number of blackboard sketches, and for the teacher who is not an art expert these will be a boon. The book has its uses, but the teacher must not expect to find in it a ready-made scheme.

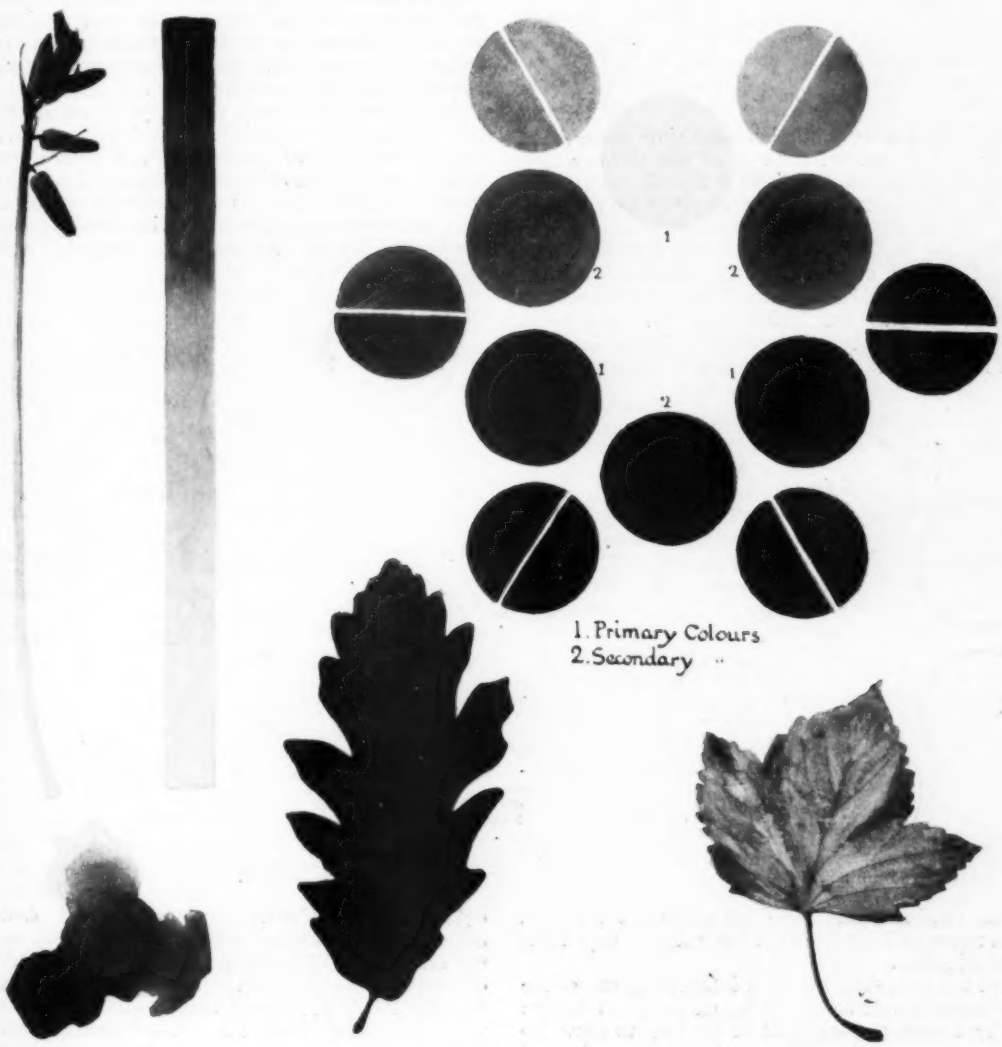
Our Art and Handwork Section.

SOME HINTS ON TEACHING COLOUR.

BY AGNES E. FARMAN.

THE aim of instruction in colour is to help children to see and appreciate fine colour wherever it is found. The colour sense, like the musical, or indeed any other sense, needs to be cultivated. It is thought by some that it is a special gift, and that only those who possess it can profit by any training, but this is a fallacy. Nearly every child responds more or less to colour, and will benefit by careful teaching, for colour blindness is exceptional. Training in colour will increase the appreciation of fine natural effects, and should be carried on out of doors as well as in the classroom. The earth and trees, the flowers and fruits, the sky and clouds, the sunsets and sunrises, all are lessons in colour which we should utilise.

Colour study needs proper, systematic, and carefully-graded teaching to be of real educational value, and the stages of progression should be such as the child will understand. It should be taken periodically as a lesson for its own sake, and for its value to the children in their after-life. For instance, to those who go from the schools to factories and workshops, where the selection of colours for manufactured goods is an important



part of their work, a trained colour sense is of material assistance.

The stage in the school course at which the following exercises are introduced must be left to the discretion of the teacher; but if introduced at the right time, they are distinctly helpful towards aiding children to see colour. A child or any untrained observer is attracted at first by simple, brilliant, and definite colours; the

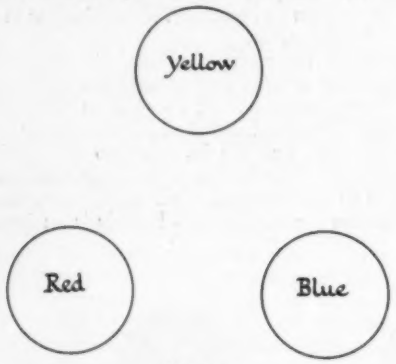


Fig. 1.

appreciation of more subtle hues and tints comes later. Neither does it concern children at first to know how colours are produced, and it is a mistake to imagine that all colour instruction must be given by means of paint. Much may be learnt from a comparison of manufactured materials of all kinds and from brilliantly coloured natural objects. In the infant schools and kindergarten classes children are given many ideas about colour in this way long before they can use a brush properly; but in the upper schools this fact is rarely taken into account, and the teaching of colour, instead

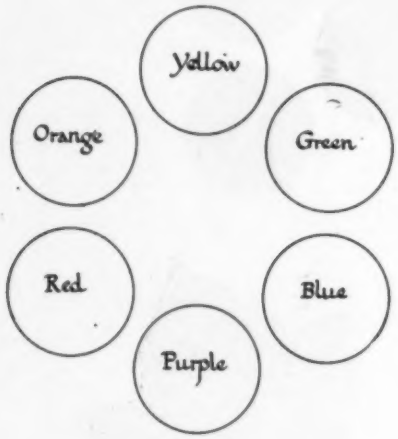


Fig. 2.

of being continued and based on previous knowledge, is begun over again as though it were entirely dependent on the paint-box.

When the paint-box has been introduced, one of the first exercises should be how to lay on a wash of colour; next, by a wash of each paint in the box, to show the difference between the pigment when in the cake and when mixed with water on paper. These experiments should be made with full, rich, liquid colour, and it will be found that on the paper the more opaque colours resemble the cake more closely than the transparent ones. These exercises may be followed by some simple ones on the mixing of colours — not at first as an attempt to match anything, but simply to show the variety of hues that even a limited number of paints will produce.

As a beginning, prussian blue, gamboge, and crimson lake may be used. They should be placed in some orderly arrangement, with spaces left for the intermediate hues (Fig. 1 and coloured diagram on p. 605). These colours should be mixed in pairs, and green will result from the yellow and blue, orange from the yellow and red, and purple from the blue and red (Fig. 2 and chart on p. 605). Between these middle, secondary colours, and the original primaries there are many hues, and later on an attempt should be made to represent one or two more stages between each (Fig. 3 and chart on p. 605). This exercise will show what a large variety there is in every colour—how, for example, though the two primaries, red and yellow, make orange, this orange may incline to yellow on the one hand or to red on the other, while green and purple may tend respectively towards yellow or blue, blue or red.

After these exercises a collection of natural objects may be made corresponding to the primary and secondary colours—as, for instance, a lemon, orange, tomato, purple pansy, blue butterfly, and leaf. Further, for more advanced pupils, a number of natural things may be brought together of the intermediate hues between one primary and another. A number of leaves

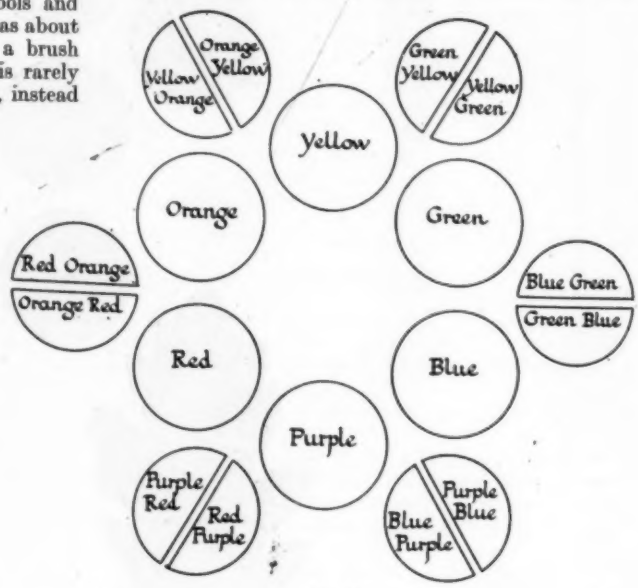


Fig. 3.

collected from different trees, shrubs, and plants all come under the heading of green. They may be laid out and compared to see if any two really match, the difference in hue between the upper and under surface may be noted, and yet all are green. If any or all of these are placed along the range of greens produced from the paint-box, it is probable that no single one of the leaves will correspond to the paint, for rarely, if

ever, is a green in Nature a mixture of gamboge and prussian blue alone. More often than not it needs another colour to bring it to the required hue. A touch of its complement red will certainly negative the rawness of the colour, but to find exactly what and how much is a matter of practice. Green is a good colour to experiment with in this way, for we cannot go far without using it. It is the background to all Nature, the colour to which the eye turns for rest. The following quotation from Hichen's *Garden of Allah* expresses this feeling, and affords, besides, a good illustration of its many qualities and varieties: "Never before had she fully understood the enchantment of green, quite realised how happy a choice was made on that day of creation when it was showered prodigally over the world. But now, as she walked over the yellow sand..... she rested her eyes and her soul on the countless mingling shades of that delicious colour—rough and furry green of the geranium leaves, silver green of the olives, black green of distant palms from which the sun held aloof, faded green of the eucalyptus, rich emerald green of the fan-shaped sunlit palms, hot, sultry green of the bamboos, dull drowsy green of the mulberry trees and brooding chestnuts. It was a choir of colours in one colour, like a choir of boys all with treble voices singing to the sun."

If for prussian blue, gamboge, and crimson lake we substitute cobalt, yellow ochre, and light red, quite another range of colours is produced. A third set of combinations can be derived from a mixture of some of the first and some of the second—for instance, prussian blue and yellow ochre, gamboge and cobalt, and so on. Trials should be made with all these, the results noted, and comparisons made with Nature's tints. By this means a closer observation and a knowledge of the immense varieties of colour are cultivated.

In conjunction with these experimental lessons other painting exercises should be regularly given from natural or manufactured objects, these being chosen so that the knowledge gained by the colour charts can be applied.

At first things should be selected which have simple colour schemes and require only a few pigments, for the children will not be able to carry their exercises beyond the actual matching of the general colour as in the brown oak leaf on p. 605; but as progress is made, leaves of more varied tints should be attempted, such as the one on p. 608, with gradations of crimson and orange, or on p. 605, where the green is interspersed with rich brown and yellow. Later on they will realise that the local colour is modified by light and shadow. In the lemon, for instance, on p. 608, although the general colour is only a slight departure from the bright yellow, it will be evident, if it is placed in a side light, that the part turned away from the light is grayed down by shade. Gray is produced by the combination of red, blue, and yellow in certain proportions (p. 605); and as the one or the other predominates the result will be a blue-gray, a yellow-gray, or a red-gray. In the case of the lemon the yellow colour will be strengthened and subdued by the red and blue, producing a grayish yellow. In the same way other exercises should be given with things of different colours, special attention being paid to the change which takes place in the light and shadow. Unless this is emphasised, there is a tendency for the children to mix a colour that as nearly as possible matches the object, making it thicker in the shadows and thinner in the lights; whereas light on colour will often alter it as much as shadow, and it is only by care and close observation that these differences can be detected.

Later, pupils may attack more complicated exercises. In the bunch of grapes on p. 608 the grapes are not all equally ripe, and a range of colour is found in which one extreme is the purple crimson and the other the purple blue. A study of the gradual change in colour from an unripe to a ripe fruit is a most instructive exercise, and often berries in many different stages may be found on one branch. In the bryony, which is illustrated on p. 608, the berries pass from the green through the yellow stage to the red.

The little glass bottle, partially filled with some red substance, on the same page, shows that in some of the most common things in everyday use a lesson in colour may be found. Glass in itself is represented by what is seen through it, and by things reflected in it. Here the red colour blends with the dirty brown label, and this merges towards the gray light on the shoulder of the bottle. In the stained neck and stopper the red-gray is repeated, the whole making quite a pleasing harmony.

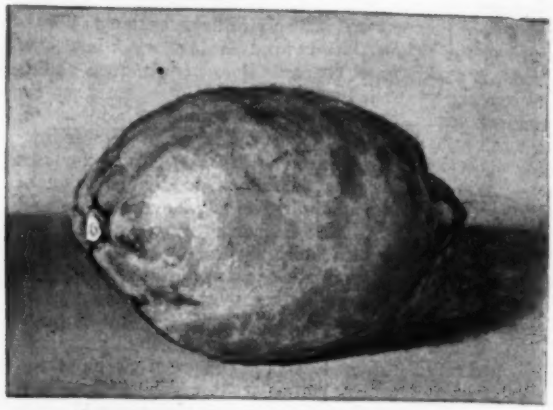
In all these exercises reference should be made periodically to the experimental charts; and although the colours in these may not be exactly what is needed, the pupil should have little difficulty in deciding on the pigments and the relative proportions which will make the required tint.

Another exercise to help children to see colour is an analysis of some flower or fruit. A wild hyacinth (p. 605), to a casual observer, is a blue flower on a green stalk, but any one who has worked out some of the foregoing exercises will see the dark blue of the closed buds becoming paler as the flower opens, the blue merging into blue-green, the blue-green into a yellower green, and so on to white. A panel with these colours placed in their order of gradation helps in the realisation of this fact.*

The exercises should be, as a rule, on white paper, with the colour sufficiently liquid to flow easily when guided by the brush; but when an exercise is given on a tinted ground, some white must be mixed with the more transparent paint in order to give body to it, for a dark ground affects any transparent colour that may be put on it. The use of white paint and thick colour should, as a general rule, be avoided in school exercises when the colour is used on white paper. The paper itself stands for white, and will show more or less through the pigment. All through the school the colours in use should be limited to six or eight carefully-selected ones. If a child has his own paint-box, it does not follow that he should use any colour that happens to be in it. Many of the cheap boxes are supplied with worthless compounds which lead a child terribly astray; and if he is allowed to dip indiscriminately into these crude tablets of paint, his colour appreciation will remain crude.

It is hoped that the above suggestions may be some guide to those teachers who find a difficulty in the initial stages of systematic colour lessons, especially where large classes are concerned and individual teaching is impossible; but, even more than in most subjects, it is one where the teacher must make his own experiments and adapt them to the needs of his class. Perhaps, also, more than in many others, he will meet with his reward in the responsiveness of the children, for whom colour work has always a special attraction.

* Further examples of this type of work will be found on page 333, volume for 1910.



SOME HINTS ON TEACHING COLOUR.

SUGGESTIONS FOR CONSTRUCTIVE WORK IN CONNECTION WITH OBJECT LESSONS.

BY FELIX T. KINGSTON, BARRY.

THE models illustrated in the present instalment group themselves round a lesson on "Coal." A few notes are appended relative to their construction.

The most suitable material will generally be thin card. Decoration by means of coloured papers or binding strips is left to the discretion of the teacher.

Fig. 1 is a simple model of the box or "cage" in which the miner stands when ascending or descending the shaft, and in which coal wagons are placed to be hauled to the surface. It consists simply of a hollow cube (Fig. 1*a*), to one side of which four pieces of thin string are fastened for attaching it to the wire rope by which

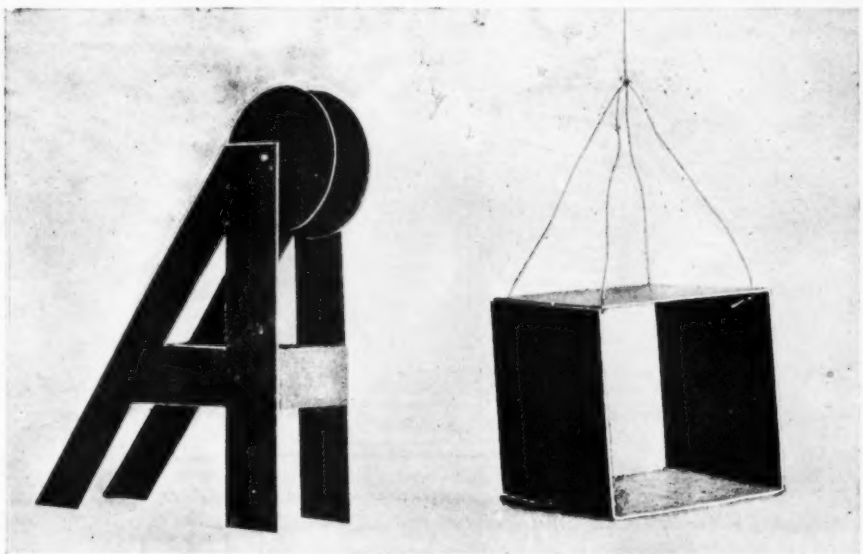


FIG. 2.

FIG. 1.

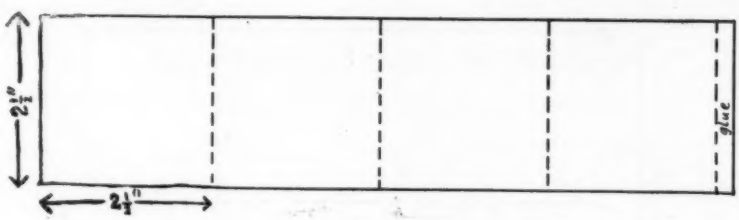


FIG. 1*a*.

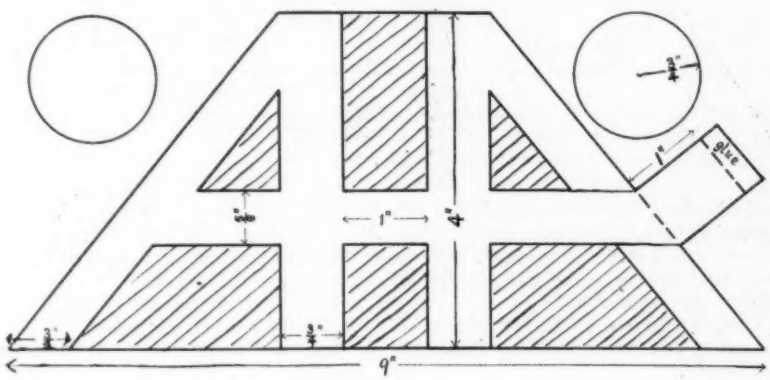


FIG. 2*a*.

it is suspended in the shaft. This exercise is easy enough for Standard III. or Standard IV., or in a more elaborated form for higher standards.

Fig. 2, model of the steel or wooden framework erected immediately over the mouth of the mine, supporting the great wheels over which the wire winding-cable passes. This exercise will give excellent practice in stopped cutting with the knife. The wheels are fixed to the top by means of a pin.

fitting together of the separate pieces of material will give the exercise more of a true constructive character. It will seem more natural to build it up piece by piece, for the child is often apt to regard the production of an elaborate model from a single sheet of card as partaking of the nature of a conjuring feat. There is no reason why the model should not be built up in the same way even by using strips of card, fixed together with glue or with paper-fasteners.

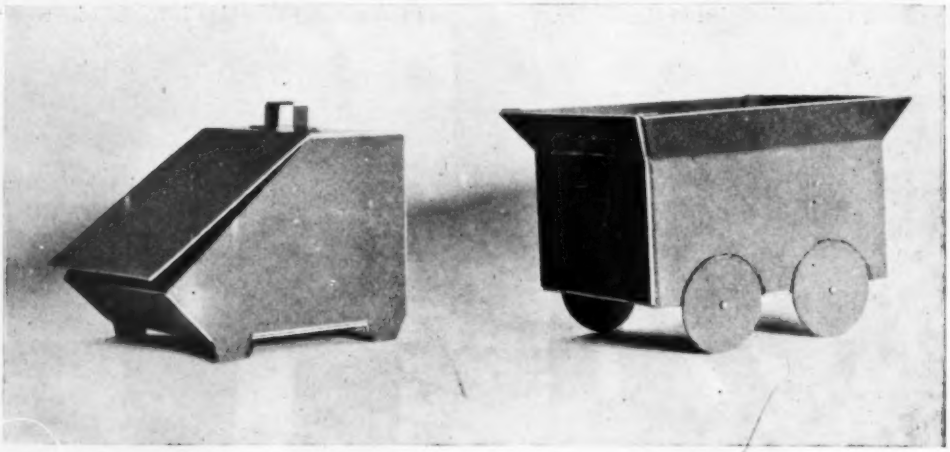


Fig. 4. Fig. 3.

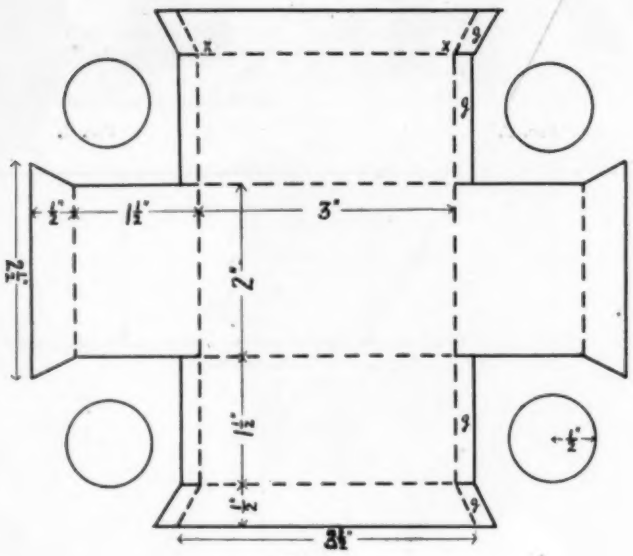


Fig. 3a.

There is no need of subsequent ornamentation of this model by fancy covering paper. The amount and character of the knifework will entail the expenditure of sufficient time and patience to make the exercise as here set long and difficult enough.

Made in thin card, the model is rather lacking in rigidity; but this defect can be remedied by using thin wood in lieu of cardboard.

If wood be the medium used, the measurement and

Fig. 3, a "tram" or wagon into which the coal is put when hewn, to be brought to the surface of the mine. Omitting the oblique flanges at the top, the model may represent a coal-truck.

Note that the scoring of the lines XX must be done on the back of the cardboard.

The wheels are attached by means of pins inserted through the centre and glued to the base of the tram. Note that material may be economised by cutting the

wheels from the waste pieces at the corners of the drawing (Fig. 3*a*). Simple calculations of the volume of contents, etc., should synchronise with the making of models of this kind.

in fact, be made to scale from the design of any such article of furniture in the child's home.

Note that line AB = *ab* (Fig. 4*a*). A simple handle can be made as shown, the lines *xy* being scored on

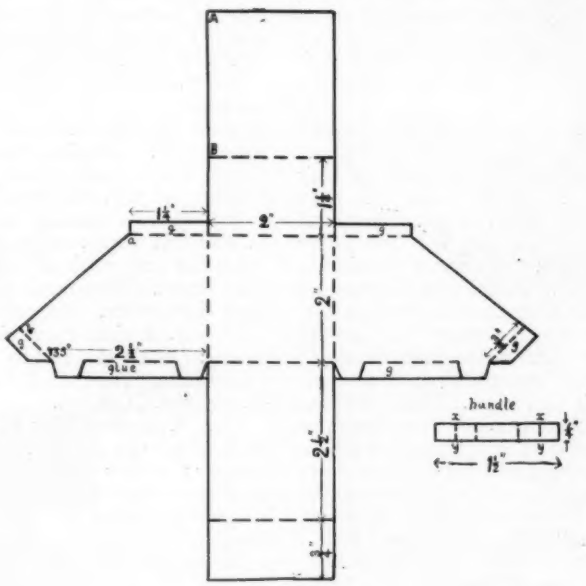


FIG. 4*a*.

In the lower classes the three foregoing models may be of service in arranging a coalfield scene, with its lines of wagons, etc., as a pictorial adjunct to the geography lesson.

Fig. 4, an exercise of domestic interest. It had better, the back of the card. The base of the coal-box is glued to flaps marked A.

With a moderate amount of ornamentation this exercise will be of sufficient difficulty for an advanced class of scholars.

HANDWORK FOR JUNIORS.

BY H. WAY, INSTRUCTOR SCARBOROUGH SUMMER SCHOOL.

PAPER AND CARD WORK.—II.

A CHILD is intensely interested in a thing that works, particularly so when it is of his own construction. Watch a small boy playing on the floor with his engine: the long tunnel of newspapers is a source of the keenest enjoyment. He starts the toy into the dark hole, flings himself down at the other end to watch for its reappearance, eagerly awaiting the shudder of delight which thrills him on seeing it emerge—a delight which prompts him to perform the trick again and again. To see such interest depicted on the faces of hundreds of children at once is somewhat unique. A few weeks ago a popular periodical described a method of making a paper airship. The construction was quite simple, material easily obtained. Just before the afternoon session of a large boys' school, wher most of the boys were assembled in the playground preparatory to "falling in," scores of these airships appeared. On a gentle, steady north-east wind these frail craft were launched. Away they flew, accompanied by shouts of glee from the scholars, whose upturned faces, glistening with that smile of interest, showed immense enjoyment. Up, over the telephone wires, over the adjacent houses, some dashed down, a few carried higher and higher, farther and farther, watched in their flight by this throng of boys, when—clang! clang! the school bell sounded, and the rapt gaze vanished.

How to carry this keenness inside the four walls of the school is a problem with which teachers are always struggling. One method of solution is found in producing tangible results after observation. The exercises accompanying this article are suggestions made in that direction.

In the last article drawing lines with the aid of the ruler and cutting with scissors was described; measuring is treated of in this contribution.

The difficulties of marking off required lengths are due to method, complexity of divisions on the ordinary ruler, faulty alignment of the scale with the object measured. Before proceeding to measurements on paper, give plenty of practice in measuring with the scale (Fig. 1). With large classes it is necessary to use objects which can be judged simultaneously. Variety of things measured is necessary too. Articles prepared for use in practical measurement are open to the danger of such constant use that there is a tendency to *pretend not to know*. Let the children practise measuring first,

with the "scale," such objects as the length of the ordinary reading-book, the breadth, the same of a picture in the book, a line of printing, the length of a penholder, of a pencil, and many other things near at hand, which will readily suggest themselves to the teacher. It is a good plan to confine these measurements to articles measuring even inches or inches and a half-inch at first; also to allow the children to write down their conclusions—a simple figure will suffice (see February number).

Next proceed to examine the length of objects which are not even inches or inches and a half in length, and get the children to see that a further mark on their scale is needed. A wooden rule, 12 inches long, may now be introduced, marked only in inches, halves, and quarters; or the class may be supplied with paper scales, home made, marked in the manner mentioned. With the wooden measure, unprovided with the generous addition which successfully prevents such employment, measurements of interiors may be made—such as the depth of the slate slot, the width of the shelf, the depth of a cupboard, the depth of a box, the depth of a water-bottle used in colour work, and so on. This measuring should not be merely an abstract exercise, but should be practically employed. Strips of paper supplied to the children can be cut to the length or breadth of the object considered. A square or oblong sheet of paper can be cut to cover the picture above mentioned. First cut the paper the required length, then the required width. The care expended by the children will be instantly seen on putting the paper over the picture. Or a frame of brown paper may be made by adding two inches to the length and breadth, cutting out as before, and doubling to cut out the size of the picture. The 12-inch paper scale may be used in measuring the circumferences of round objects, or anything around which it may be bent. Here, again, the matter should not rest, but strips of paper should be cut to fit round the object. Where the necessary supervision can be given the objects should not be alike, in order that individual effort on the part of the child may be secured. Variedly-sized labels, to be stuck on, may be made, and many like things will occur to the teacher.

At the present stage it is quite unnecessary to confine such exercises to the time allotted to handwork. They involve use of numbers, measuring and calculating, and so are methods in practically teaching the use and meaning of numbers. Ruling is employed, and so they become part of drawing. At the same time, they lead up to the definite handwork suggested in the following practical exercises.

Teachers should be provided with a cutting-plane of zinc about 16 inches by 12 inches, a safety straight-edge, and a sharp knife with a short blade. In preparing the strips of paper, rectangles or squares, as may be required, twenty sheets may be cut at once with very little effort, if the novice will always remember that a *series of light, even cuts*, made while holding the knife easily, gets through the material more readily and smoothly than a hard pull at the knife.

Practical Work.

Fig. 8. Give the children an 8″ square of any coloured or white paper. Let them mark the inches on each edge of the square. Draw lines across carefully, following the instructions in Article I. for each line. Mark and cut out each letter separately. A number of words can be built and recorded with these letters.

Fig. 9. Give the children an 3″ square of bright-coloured paper. Let them draw lines from corner to corner. Measure and mark off on these lines 4½″ from each corner. Cut along the lines to the points marked. Bend, but do not crease, alternate angles into the middle, and turn the figure into a windmill.

Fig. 10. A measuring, drawing, and cutting exercise in coloured paper. Give the children an 8″ square. With the scale mark off 3″ from each corner, and draw lines across. Next mark off 2½″ from each corner, and draw lines across. Cut out as shown.

Fig. 11. A similar exercise. Give the children a 6″ square. Mark the middle point of each side. Draw lines across. Mark off 2¼″ from each corner, and draw lines across. Cut out.

Fig. 12. A small tray in brown paper, folding exercise. Give the children an 8″ square. Fold in this manner: corner to corner, to make the diagonals; corners to centre; corners to points marked *a*; corners to points marked *b*. *Turn the paper over.* Fold the diameters by placing edge to edge; corners to position *b* on opposite side. The two last folds on the reverse side of the paper are shown by dash-and-dot lines. Fold together as shown in 12*a*; *cdef* forms the base, and the triangles similar to *dgh* are folded inwards to form the support of the sides. These supports may be fixed with gum or fastened with paper-fasteners by the children at home.

Fig. 13. A paper ring. Strips of paper, coloured, 8″ by 2″. Mark points 1″ from corner on each shorter edge; join. Measure 1″ from each corner, and draw line across. Draw lines to middle of each side. Cut out. Mark ½″ in from *a* and *b*, and cut to the points. Mark *c* and *d* ½″ on either side of middle line. Fold lightly, and cut along *cd*. Bend, but do not crease, and fasten as shown in 13*a*. These rings may be decorated, or they may be made for definite purpose of varying size.

Fig. 14. A luggage label. Strip of thin, tough paper or drawing-paper, 8″ by 2½″. Measure off 4″ on each long edge. Draw line across. Fold end to this line; crease. Fold corners as shown; crease firmly. Bend and crease triangle shown to middle of line. Pierce or punch a hole and put string through.

Fig. 15. A small tidy. Square 8″. Measure and draw lines 1¼″ from corner, as shown in 15*a*, by dotted lines. Fold corner to *c*, and crease. Mark centre of this crease, and fold each side corner as shown in 15*b*, complete as in 15.

Note.—Children are not required to draw dotted lines. All measurements should be made by placing the scale above the edge of the paper, not on the paper.

The current issue of the *School Arts Book* contains many excellent things. The following puts the teaching of drawing in a nutshell:—1. The mere observation of fine examples of pictorial art is not sufficient to establish standards which will ensure correct drawing. 2. Desire alone, no matter how keen, can never produce good drawing. 3. Persistent practice, of itself, cannot result in correct drawing. The practice must be *under guidance;* the desire must be backed by *intelligence;* the observation must be that of the *forewarned* eye.

Fig. 8.

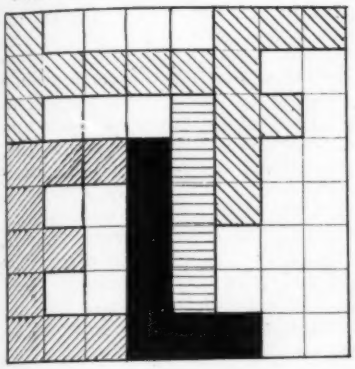


Fig. 9.

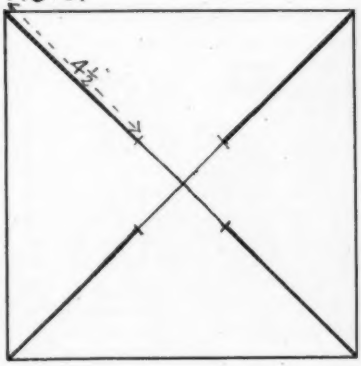


Fig. 10.

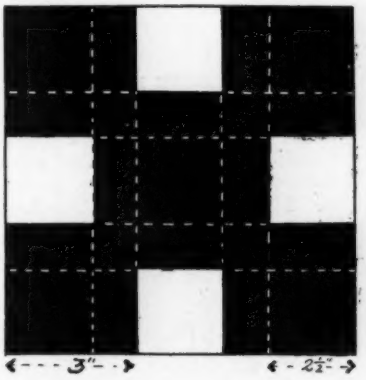


Fig. 11.

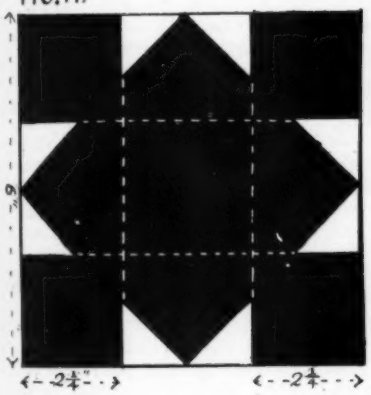


Fig. 12.

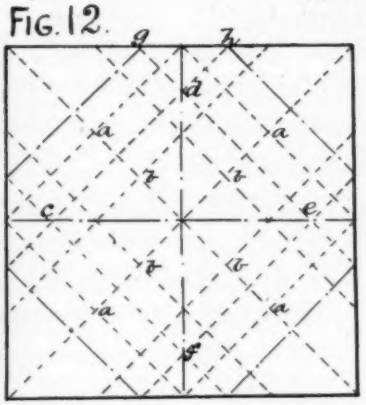


Fig. 12a.

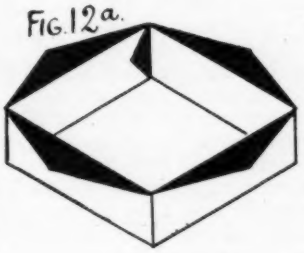


Fig. 13.

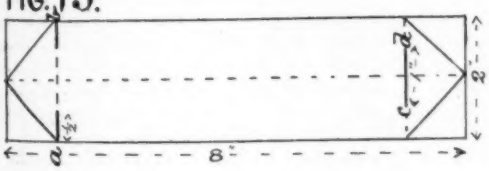
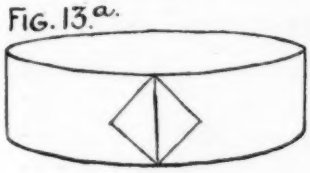


Fig. 13a.



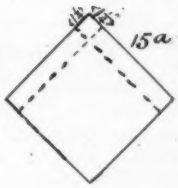


Fig. 14.

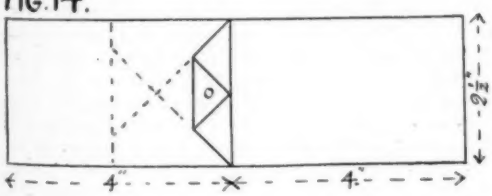
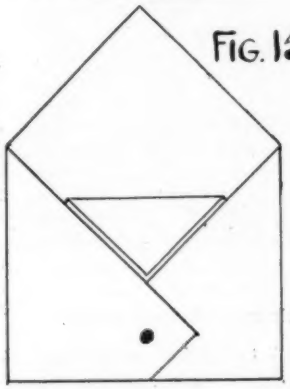
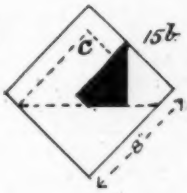


Fig. 15.





ART AND THE BOOK.

EARLY TYPES.

BY W. E. SPARKES.

The Connection between Handwriting and Printing (Gothic and Italian Types).

IT has been pointed out in former papers that the earliest types were founded upon handwriting, and that they varied according to local fashion in penmanship. The scribes living in Northern Europe wrote in what may be called "Gothic hand," with a world of twists and turns and flourishes quite in keeping with the quaintness of Gothic ornament; but those who wrote the beautiful manuscripts hailing from the south—from Italy, Spain, and the Mediterranean seaboard—were less fanciful in their practice.

Indeed, the difference between the two main styles, the Gothic and the Italian, is largely the difference to be seen in the buildings erected in Northern and Southern Europe. The Italian architects never took kindly to the Gothic; they selected for their models the simple and severe lines which the former builders in Greece and Italy had always followed. On the other hand, in Germany, Flanders, England, and north France this severity early gave way to fancy. The churches were piled high on slender pillars, the towers rose to an arrow-point, and everywhere, within and without the building, in carved stone and wood, or in painted ornament, there were the quaintest conceits as well as the daintiest beauty.

The monks were both architects and builders; they were carvers and painters, workers in metal and glass. All materials were alike to them, and upon them all they exercised their skill, wit, and fancy.

What more natural than that this should be reflected in their manuscripts? The borders were exquisitely drawn, but very often there are the most startling little additions, which in our sober days would be thought strangely out of place. And, quite in keeping with these flourishing borders, the handwriting was ornamented to such a degree that sometimes it is difficult to pick out the letters from among the maze of lines in which they are almost lost.

On the other hand, the severe art that Italy had inherited from Greece and Rome remained calm, cold, and even-balanced. The churches were decorated with frescoes and carvings; there were paintings and mosaics; metal was freely used; yet all the forms were restrained. The connection between Italian and Gothic art would thus appear to be remote. To compare a Gothic with an early Italian church, both of the thirteenth century, appears at first to be comparing two entirely different forms of architecture; but, as a matter of fact, both had a common origin. For Italian art sprang directly from the old Roman and Greek art, and its forms became more intricate and decorated as it found its way into the northern countries, just as a strong, straight branch from a tree trunk may give off branches that twist and turn and give off a multitude of leaves from their interwoven twigs.

The Influence of Italian upon Gothic Type.

Now, handwriting is an art; and, so far as Europe is concerned, however various the forms may have been at any time, they can all be traced back to the ancient days—to Roman lettering, which itself came mainly from the Greek. Enough for our present purpose to point out that when the first printers who had set up their presses in Germany travelled to foreign countries, they found most astonishing differences in the handwriting of the peoples among whom they sojourned. In Germany the type-cutter had a harder task than he had in Italy. He had the most complicated forms to cut in the former country; but when he carried his precious founts into Italy, he was told bluntly that such barbaric, such "Gothic" lettering was fit only for the uncultured men of the north: here in Rome, or Venice, or Florence, among the great scholars, all of whom looked lovingly back to the ancient times, nothing extravagant would be endured. "Look," they would say to the unfortunate printer—"look at your ugly type, as ugly as the writing of your scribes! Why have your people not been content with the beautiful lettering which they took from us, but must needs overlay it with this barbarous trickery? Throw away your type: in Rome you must do as the Romans do. Cut fresh type founded on our fine writing."

It is not strange that these fashions in writing should have come about. Any art that merely repeats itself soon becomes fixed in its forms, with the fixity of death. The Eastern Greek Church furnishes a striking example of this, for its artists repeat, year in, year out—and have repeated for hundreds of years—the style of art which was in existence in the eighth century, and has never been allowed to change. The lettering is Greek; the forms are coldly repeated without life or spirit. But when Rome in its pagan days sent her conquering armies among the more barbaric tribes, she also sent her scholars when the countries were become provinces to the ancient city; and later, when Rome had been driven back from these outlying possessions to defend herself, she did not lose the power that came from her encouragement of learning; for one has but to think for a moment of her vast power over men's minds when she became the centre from which Christianity spread. As Europe came more and more into touch with Rome, it came at the same time into touch with the ancient learning, arts, and crafts which she had always so jealously guarded and so carefully tended.

Handwriting and the making of manuscript books were among these arts. But there was the breath of life in them all, and therefore constant change. It is not difficult, then, to account for the various fashions of handwriting, so strangely differing in different countries, yet all bearing the family likeness to the Greek and Roman lettering from which they sprang. Nations have their temperaments as individuals have. The German and Flemish love of ornament was no new thing in art. It seemed to be inborn in the people; and long after Europe came again under Italian influence in the sixteenth century, German art still maintained what appeared to be an extravagant liking for decoration. Yet, as we shall see, in some arts, and notably in the art of lettering, the Germans found it expedient to cast new types after the Italian model; though one may point out how, to this day, the German clings to his old-fashioned, involved type. The world has not been altogether a gainer in reducing all types

Nach dem aber vnd er den weg nahend haym mit dem vnschuldigen kind komen was/vnd sich allent halben ob in nyemandt mit dem kind sahe vmsahe/ Da sach er einen leyrer zů der lincken seyten arbetend Er erschrack seruast vñ stůnd mit dem villieben kind vntz sich der leyrer mit seinẽ gesicht abkerte/Er hůb sich schnell auf sein füß vnd eylte mit dem kind tzů dem hawß des iuden Samuels/vnd schlappfte das mit im hin ein in das hawß.

Der Samuel als er das schön kind amblickte/als ein tiger tier/begerte er des blůtes des vnschuldigen

Semi-Gothic type, printed at Augsburg about 1475.

to the Italian form. It is refreshing to find countries such as Russia and Greece maintaining their ancient script; and every one must sympathise with the movement among the Celtic people to bring back again the exquisite lettering which makes their ancient manuscripts so delightful for their harmony in lines.

Let us now consider a few examples of early printing. In former papers I have given reproductions from Gutenberg's "Bible," the first of all printed books, and also from some of Caxton's pages. The flourishing Gothic style is apparent in both, but it was not long before these forms became simplified. The old black letter gradually gave way before the still older Italian. Here are two examples of what may be called, perhaps, semi-Gothic. You may see the same stems in such letters as the *w*, *h*, *d*, *s*, and *y*, but the flourishing twigs have been cut close—the type has taken the first step which distinguishes it from handwriting.

EARLY SEMI-GOTHIC TYPES—(1) PRINTED AT AUGSBURG, 1475; (2) PRINTED AT NUREMBERG, 1480.

1. The first example, printed by the celebrated G. Zainer of Augsburg, is in a very finely designed heavy type, strong, upright, easily read, the flourishes having been reduced to a minimum. One feels that the designer of such a type was an artist, for it is no light matter to draw up a set of letters that shall be old enough in form not to confuse the eyes used to "black letter," and yet new enough to mark it off sharply from all that had gone before.

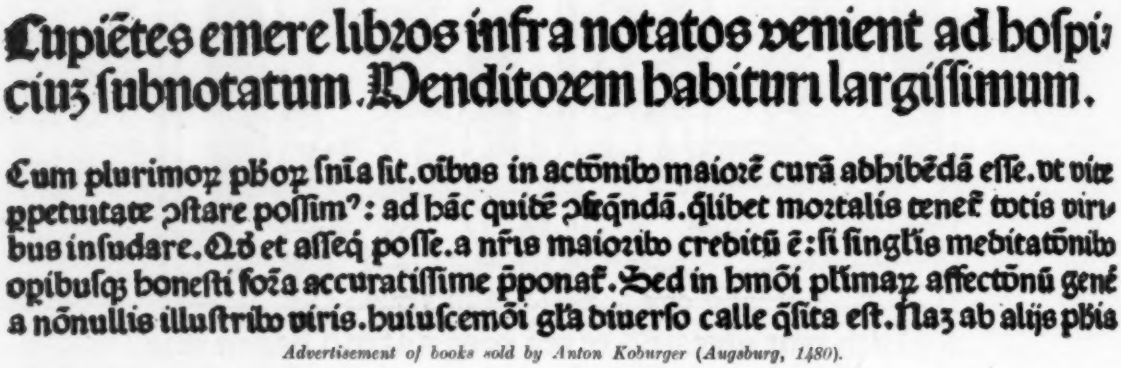
(The book itself deals with the old story of the Christian child who was murdered by the Jew. It seemed to have a strange fascination in olden days. In the illustration reproduced here the artist fell back upon the old practice in painting—the practice of putting more than one scene in the picture. In the present instance the Jew is seen enticing the child with a penny, next taking him by the hand, and lastly thrusting him into a house.)

2. The second example is the advertisement of a printer and publisher, Anton Koburger of Nuremberg (1480). He announces, in large letters at the head of the page, that if those who wished to buy certain books would repair to the undermentioned shop they would find a salesman with a large stock.

He then proceeds to advertise his wares in the approved style, and winds up with a description of the book on sale. There is nothing new under the sun, not even the art of "puffing."

But that is beside our purpose, which is to take note

of fine type. The designer has not gone quite so far from the old "black letter" as Zainer's designer had gone. There are more suggestions of the flourishes, and especially of the breaks in the curves of letters—such as *e*, *c*, *u*, and *g*—so that it may be considered to be the intermediate step between the common flourishing freedom of the German scribes and the much


Cupiẽtes emere libros infra notatos venient ad hospi-
cium subnotatum. Venditorem habitum largissimum.

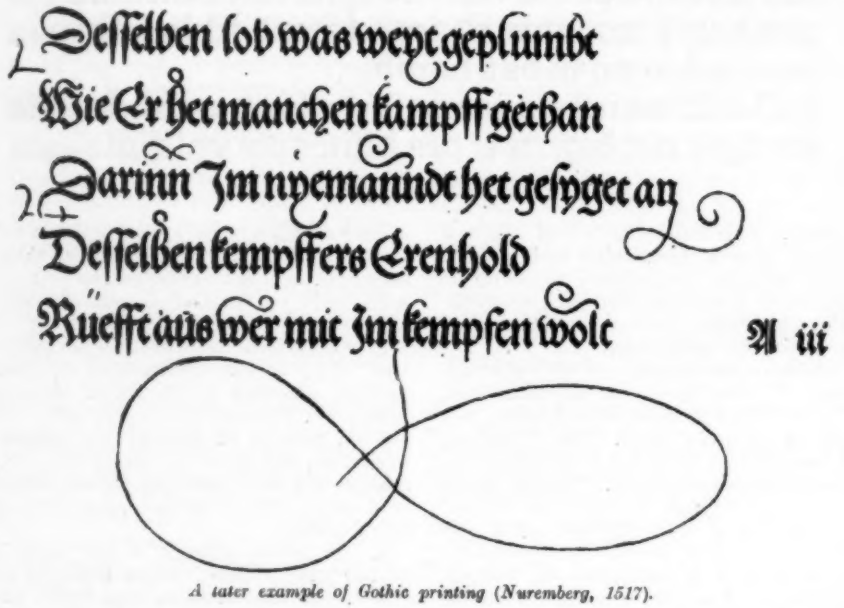
Cum plurimor pbor sñia sit. oibus in actõnibo maiorẽ curã adhibẽdã esse. vt vite
ppetuitatẽ pstare possim⁹: ad hãc quitẽ pstãndã. qlibet mortalis tenet totis viri-
bus insudare. Qd et assequi posse. a nris maioribo creditũ ẽ: si singlis meditatõnib
opibusq bonesti fora accuratissime pponat. Sed in hmõi plimar affectõnũ gene
a nõnullis illustribo viris. huiuscemõi gla diuerso calle qsita est. Haz ab alijs pbis

Advertisement of books sold by Anton Koburger (Augsburg, 1480).

more sober forms of the Augsburg printer, who, no doubt, had been influenced by the Italian books brought by the ambassadors from the Pope to the religious houses. For the Church still appeared to be the greatest benefactor of printers and their most liberal customer. This, no doubt, accounts for the large number of religious works that came from the earliest presses. It may account for the term "chapel," used by comproud. He was not altogether successful, because the wires shifted or got broken in the press.

ITALIAN LETTERING—(1) EXAMPLE PRINTED AT PARIS, 1470; (2) EXAMPLE PRINTED AT VENICE, 1470.

The University of Paris had a wide repute in the fifteenth century. Scholars from all parts crowded into


Desselben lob was weyt geplumbt
Wie Er het manchen kampff gethan
Darinn Im nyemannde het gesyget an
Desselben kempffers Erenhold
Rüefft aus wer mit Im kempfen wolt
A iii

A later example of Gothic printing (Nuremberg, 1517).

positors, as distinguishing the room from which devout works were issued, rather than indicating the devotional habits of printers themselves.

At the same time that these changes in lettering were becoming more and more common, there was still a regard shown for the old black letter. The example above is an extract from a fine book printed at Nuremthe city; and, as might have been expected, printing became in very early days an important craft. Manuscripts from Italy and from Germany found their way to the university; the revival of classical learning, which produced such writers as Dante and such painters as Fra Angelico in Italy, influenced strongly the trend of literature and art in France, and particularly in Paris.

And since the Italian type was universally used in Rome, Venice, and Florence, the three great intellectual centres in Italy, it followed naturally that this rapidly took the place of the Gothic forms which were at first common in Paris and the northern cities.

1. The first example reproduced below was printed at Paris in 1470. The designer of the type had not quite cut himself adrift from the old Gothic lettering, as may be seen by carefully examining the letters—such as the *m*, *n*, *e*, *h*, *p*, etc. The little breaks in these

GVILLERMVS Fichetus pariſienſis
theologus doctor, Ioanni Lapidano Sor-
bonenſis ſcholæ priori ſalutem ;
Miſiſti nuper ad me ſuauiſſimas Gaſpa-
rini pergamenſis epiſtolas, nō a te modo
diligent emēdatas: ſed a tuis quoq; ger-
manis impreſſoribus nitide & terſe trā-
ſcriptas. Magnam tibi gratiā gaſparinus

Italian type, with a suggestion of Gothic. Printed at Paris, 1470.

letters, and the turns at the ends of the straight strokes, are quite evidently borrowed from the forms which are more completely shown in the old German and Flemish manuscripts.

And at the same time there is a great likeness to true Italian lettering. The type is thinner and further removed from handwriting; and this is particularly seen in the capital letters, which are copied directly from the old Roman lettering—that is to say, in the style used by the sculptors of the ancient inscriptions set up in the streets to commemorate great events. The Italian printers had taken these capitals as their models, and they are in use to this day.

The effect of thus combining letters with just a touch of the old Gothic upon an Italian stem with other letters that are frankly Roman is very pleasing and unusual. It may be compared with Zainer's type used at Augsburg, in which the Gothic is more strongly marked than the Italian.

These experiments are deeply interesting. Artists were doubtless called in to assist the typefounder, and there must have been many anxious attempts before the happy medium between two very different forms was struck. But the pressure from Italy was incessant. In that country the question of grafting German and Flemish styles upon native art does not seem to have been entertained for a moment; and as the Italians were the leaders in the arts, the final result could have been foreseen. As a matter of fact, the vast majority of type used to-day in most countries is almost entirely derived from Italy.

2. It is interesting to compare the example which was printed in Paris with one that came from a Venetian press in the same year (1470). This is purely Italian in design. If the same letters—*m*, *n*, *e*, *h*, *p*—are compared in both, the Venetian lettering is found to differ widely from the French with its hints of Gothic decoration; for the stems of the upright strokes are finished with a horizontal line, and not with an oblique, which suggests the lozenge forms so dear to the German scribe; the *e* has no break in its curve, and so on.

Yet this Italian type is quite evidently derived from handwriting, as all the cross-strokes and upward turns are thinner than the down-strokes. Indeed, in careful Italian manuscripts of early days all the letters are self-contained as they are in this type, and it was only later, or in hurried script, that the pen was carried on in connecting strokes from one letter to the next.

inquit idem Saluſtius defendiſſes: idq; Pompeio contēdenti dediſſes:
etenim uehemēter orabat Lepidum amicum ac Saluſtium: q mihi aut
inimicitias putet piculoſas ſubeundas fuiſſe: aut infamiā ſēpiternam.
Ego uero hac mediocritate delector. ac mihi illud iucūdum eſt: q cum
teſtimoniū ſecundū fidē & religionē grauiſſīe dixiſi ē reus ſe dixit ſi in
ciuitate licuiſſ& ſibi eſſe mihi ſe ſatiſfactuꝝ: neq; me qcq̄ īterrogauit.
De uerſibus quos tibi a me ſcribi uis deeſt mihi qdem opera: quæ non

Italian type. Printed by Jenson at Venice, 1470.

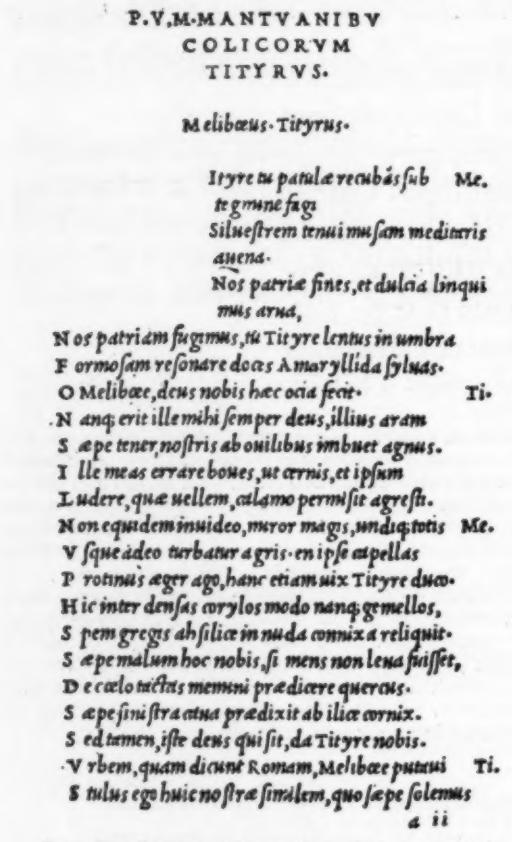
Jenson's print is universally admired for its exquisite form and spacing. Decorations are reduced to a minimum, the aim of the designer being to secure easy reading while still employing beautiful shapes. The fine, firm black lines compare more than favourably with the thin and inartistic types so commonly used in later days.

The Invention of Italics (1501).

But these thick letters with ample spacing between each had one disadvantage: the books printed in such

type were necessarily too large to be comfortably carried in the pouch. For if the size of the page were reduced, a work of ordinary length would become thick and clumsy. This consideration led to a notable invention.

Venice had been for many years one of the most literary and most artistic cities in Europe. It is no wonder, then, that the new art of printing soon became a passion among the Venetians. Their greatest artists



P.V.M.MANTVANI BV
COLICORVM
TITYRVS.

Melibœus. Tityrus.

Ityre tu patulæ recubás ſub Me.
tegmine fagi
Silueſtrem tenui muſam meditaris
auena.
Nos patriæ fines, et dulcia linqui
mus arua,
Nos patriam fugimus, tu Tityre lentus in umbra
Formoſam reſonare doces Amaryllida ſyluas.
O Melibœe, deus nobis hæc ocia fecit. Ti.
Nanq; erit ille mihi ſemper deus, illius aram
Sæpe tener, noſtris ab ouilibus imbuet agnus.
Ille meas errare boues, ut cernis, et ipſum
Ludere, quæ uellem, calamo permiſit agreſti.
Non equidem inuideo, miror magis, undiq; totis Me.
Vſque adeo turbatur agris. en ipſe capellas
Protinus æger ago, hanc etiam uix Tityre duco.
Hic inter denſas corylos modo nanq; gemellos,
Spem gregis ah ſilice in nuda connixa reliquit.
Sæpe malum hoc nobis, ſi mens non læua fuiſſet,
De cœlo tactas memini prædicere quercus.
Sæpe ſiniſtra caua prædixit ab ilice cornix.
Sed tamen, iſte deus qui ſit, da Tityre nobis.
Vrbem, quam dicunt Romam, Melibœe putaui Ti.
Stulus ego huic noſtræ ſimilem, quo ſæpe ſolemus

a ii

From the "Virgil," printed by Aldus at Venice in 1501. The first example of italic type.

(The square space was to be filled with an initial T, to be drawn, probably in red ink, by hand.)

designed initial letters and illustrations to the text; the wealthiest citizens took a pride in lending their aid to advancing the production of beautiful books. The most notable printer and publisher was Aldus Manutius, and his name is particularly associated with a type which has become commonly known as Aldine *italic*.

There is an interesting legend that this type was founded on the handwriting of the great national poet Petrarch, who died in 1374. This fact alone would have given a sentimental value to the new type; but Aldus probably had only the severely practical end in view of employing a small, thin, easily-packed yet easily-read type in order to reduce the size of the page.

He tells us in the preface to the first book printed in this type (a *Virgil* published in 1501) that the clever type-cutter was Francesco of Bologna, who has been identified by some authorities as the celebrated painter known commonly as Francia. There is nothing improbable in the suggestion: the greatest artists were proud to be employed in designing type or illustrations for books. Even Raphael drew designs for an edition of Dante's *Divine Comedy*.

This delightful type soon had a wide vogue. Aldus obtained a copyright to its exclusive use when he published his first book in italics; but, *the same year*, a similar edition was printed by a foreigner at Lyons, and the invention was soon so commonly pirated that Aldus was compelled to point out how his patrons might distinguish the type cut by Francesco from that used in other towns. The fact that italics were cut in the same year at Lyons is proof of the close connection between the chief European cities where printing had become firmly established; and it gives a key to understanding the changes from Gothic to semi-Gothic, and thence to Italian lettering, which was a common procedure in French and even German cities, as I have pointed out above.

In the page reproduced here from Virgil's *Eclogues* it will be seen that a square space has been left at the beginning of the poem, and that this was to be filled by the initial letter T. This would no doubt have been drawn in red ink, as that was the common practice—a practice dating from the very earliest Roman manuscripts, in which red and black were the commonest elements in use. The effect was very fine; and it is remarkable that in modern days there has been a revival of the practice among printers engaged upon fine editions. For, after all, as the examples of type reproduced in this article demonstrate, it is rather simplicity of form, guided by cultivated taste, that gives the most artistic results.

After those early days the types became debased as art degenerated; for all crafts suffer together when the spirit that informs them sinks to a lower level. A careful student of the types used in printing during any given period can give a pretty accurate guess at the *general* state of art in the country which produced the book; the finest periods—such as the early Renaissance in the fifteenth century and its later development in the sixteenth century—being distinguished as much for their fine printing as for their stately buildings and paintings. And this must necessarily be true, because the designing of type is as difficult a matter as the designing of a picture, and calls for that exercise of taste which cannot be taught, but must be the outcome of cultivated knowledge.

[The examples given above are by the kind permission of the Director of the British Museum.]

THE following paragraph from the *Glasgow Herald*, dealing with the current exhibition in the Fine Arts Institute, may be of interest to readers of the Art Section:—

"Mr. F. H. Newbery's 'J. Vaughan, Esq.,' Superintendent of Drawing, Glasgow School Board, shows a craftsman refusing to indulge in 'difficulty-dodging' impressionism, but instead earnestly searching for qualities of draughtsmanship, of design, of colour implicit in the theme and expressive of his own outlook. Despite the inappropriate emphasis in the modelling of the left hand, which detracts from pictorial unity if not from explicitness of characterisation, this portrait is one of the strongest and most sincere in Sauchiehall Street."

THE HISTORY LESSON AND DRAWING.

ARCHITECTURE.—I.

BY W. H. ELGAR.

SINCE the outlook of the pupil has been extended, during the last few years, beyond the walls of the classroom, much has been written, both for him and his teacher, upon our various styles of architecture. Perhaps this is because the material for such writing lies ready to hand in the many small books which have been published recently, but which are in too many cases mere compilations from other works. Many persons who can handle a camera have found in architecture a means of introducing their photographs and themselves to the reading public. No doubt such books serve a useful purpose in spreading a knowledge of the features by which the work of the several periods is distinguished; but this is only part of what the teacher desires. He wishes to set his pupils to work, to learn by doing as well as by hearing and reading—the way of the *practical teacher*.

A great deal has been made of correlation, so much so that some of us are a bit tired of seeing the word; and though the title of these papers indicates a correlation of at least two subjects, each section under our title is treated individually and its special points brought out, being for the moment a separate subject.

To do this efficiently the question must be asked, "What are the points which this subject is best able to illustrate?" Applying it to the present paper, "What can architecture do for our pupils that other subjects cannot do so well?"

It can give a sense of size and proportion, of relation, and of the fitness of things to the purpose for which they are made. Lessons are forced home in the application of local materials or making the most of that which lies within reach. Coming more to detail, de-

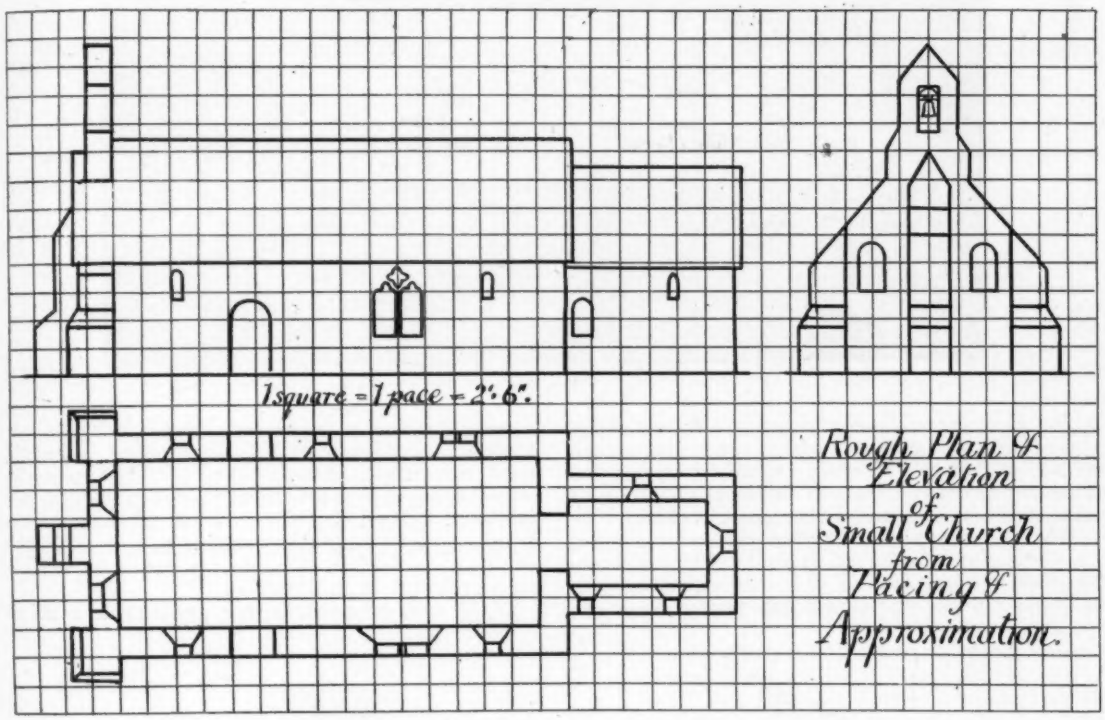


FIG. 1.

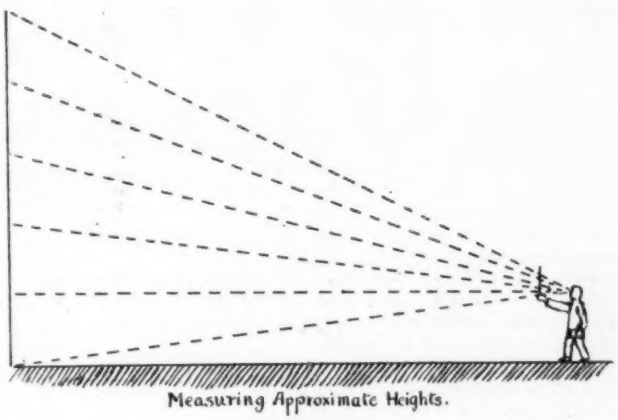


FIG. 2.

velopment of surface and the relation of plan to elevation and section cannot be better illustrated than by a study of architecture.

Probably the extent of architectural study undertaken by schools has been almost confined to making rough sketches of separate features or picturesque rough perspective views. Nothing should be said against such methods for general work, but it is not treating the subject so as to get the most out of it. We are almost always looking from detail to detail in too many of our studies, so that, when we come to a subject that preeminently demands a grasp of things as wholes, every effort should be made to get that largeness of idea.

It is very tempting to be critical just here of much of the work of antiquaries and students of old buildings. They seem to look at them as patchwork quilts, made of separate pieces, not as old structures patched and mended and often enlarged. Notwithstanding the various additions and alterations, very many of our old churches and houses still present a harmonious whole which is very pleasant to behold.

Our first illustration consists of a plan and two elevations of a little church erected in the early Norman period. The plan was obtained by pacing, which was managed by starting from the south-eastern angle and walking westward, noticing the paces at which the several windows and door were passed. Similarly the north and east sides were obtained. The west end, with the three buttresses, presented a little more difficulty: it was managed by combining the observations taken from the south and west sides, thus getting the relative projections of the buttresses.

The elevations were got by marking two paces (5 feet) up on the several walls in chalk; then, by holding a rule at arm's length (as in Fig. 2), and walking backwards until, say, an inch corresponded to the 5-feet mark, the other heights were approximately measured. By drawing upon squared paper, such work takes very little time, and gives invaluable training in systematic observation, as well as producing a far more reliable record than by simple sketching.

If this work is carried further, and a model made of paper to scale (as Fig. 3), the exercise becomes almost invaluable. A pupil who has made a model or so of this description will have practically no difficulty with problems on development of surface, which are often misunderstood. It will be seen that the west wall is made of wood, the buttresses being cut separately and glued on; for it would have been very difficult to make this part of paper. The model was painted in

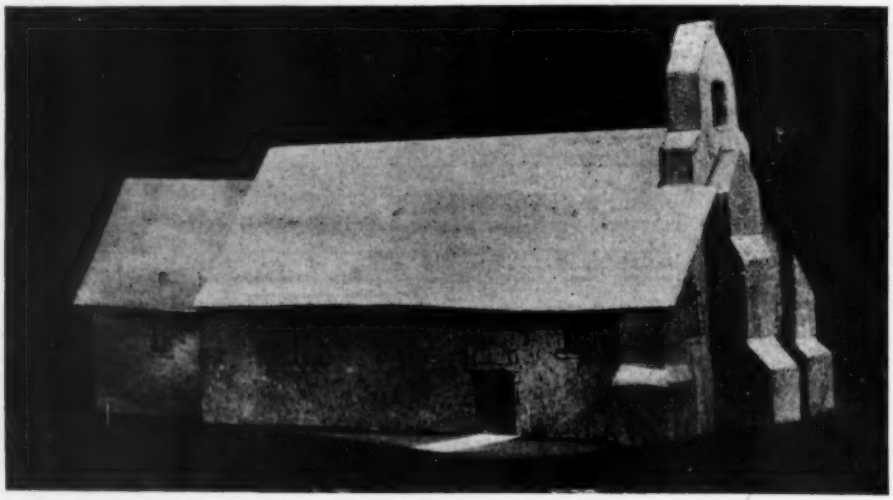


Fig. 3.

Fig. 4.

water colour to imitate the actual colour of the church.

Another rather more difficult but less thorough method is the combination of the plan with rough perspective sketch. This gives life and meaning to the study of perspective, which many of us remember in its non-applied stage of twenty years ago. Fig. 5 is the plan of the large farmhouse drawn as Fig. 4. S is the point from which the sketch was taken. Lines are drawn from S to the principal angles on the plan; then the angle between the extreme converging lines is bisected, and any line TT drawn at right angles to the bisecting line will intersect all the converging lines and give the positions of the vertical lines in the perspective sketch, which, it will be seen, is just the same in length as the line TT. This does not correspond in the illustration, for Fig. 4 has been reduced. After making one sketch, a good exercise would be that of drawing another from a fresh position before revisiting the building, when incorrect impressions could be rectified.

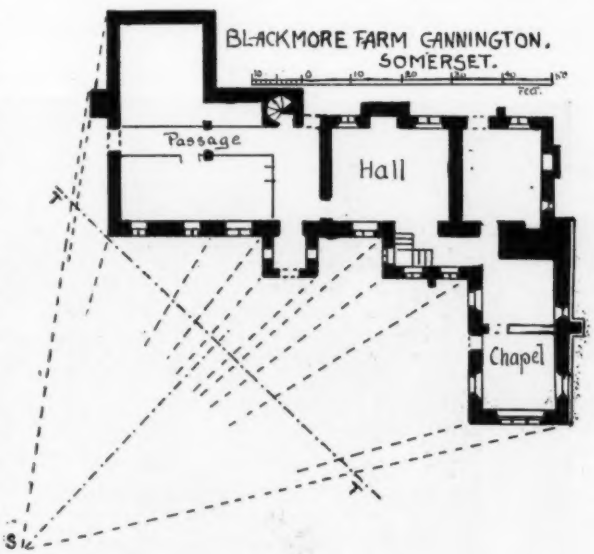


Fig. 5.

Pacing might be much more frequently employed for measuring purposes than it is, for when carefully done the results are surprisingly accurate considering the method. The main things to mind are to walk straight and count accurately. If two objects, one more distant than the other, be kept in line, one covering the other, when walking, the pacing will be kept straight. Then any slight variations in the paces become a mere nothing as the number of paces increases. Again, the drawing, being made to a small scale, becomes practically correct for all ordinary purposes.

In Fig. 6 a method of pacing out a small churchyard is shown. First, a plan of the church was obtained. Then, starting from point A at the south fence, where the east wall, FB, was just visible, and keeping this wall just in line, the distance ABE was paced. Returning to A, and noticing what portion of the north wall was in line with the angle C, the line ACD was measured, thus obtaining the direction of and two points in the north wall. Walking from D to the west end of this wall, and returning to D and continuing on past E to the east end, enables the total length to be obtained and the length DE to be checked. From this east corner a walk to G, where the angles B and H come in line, will give us the starting-point for another useful measuring line GBHJ. The other lines on the plan are inserted as suggestions, AG being a line which assists in obtaining the curve which lies to the east of it.

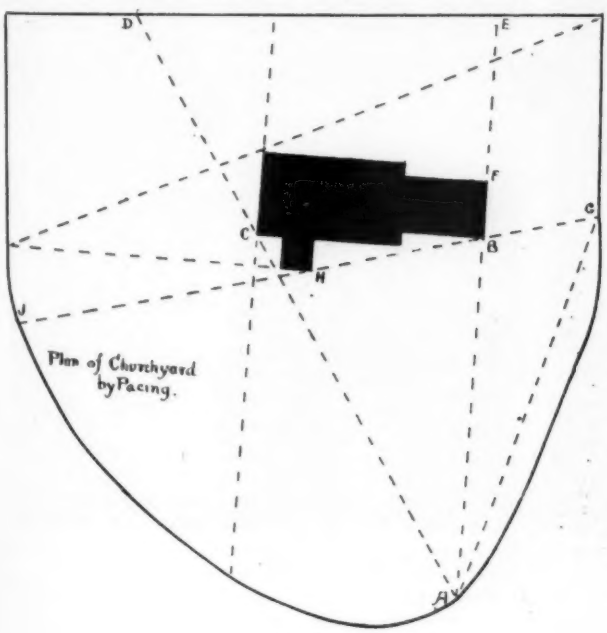


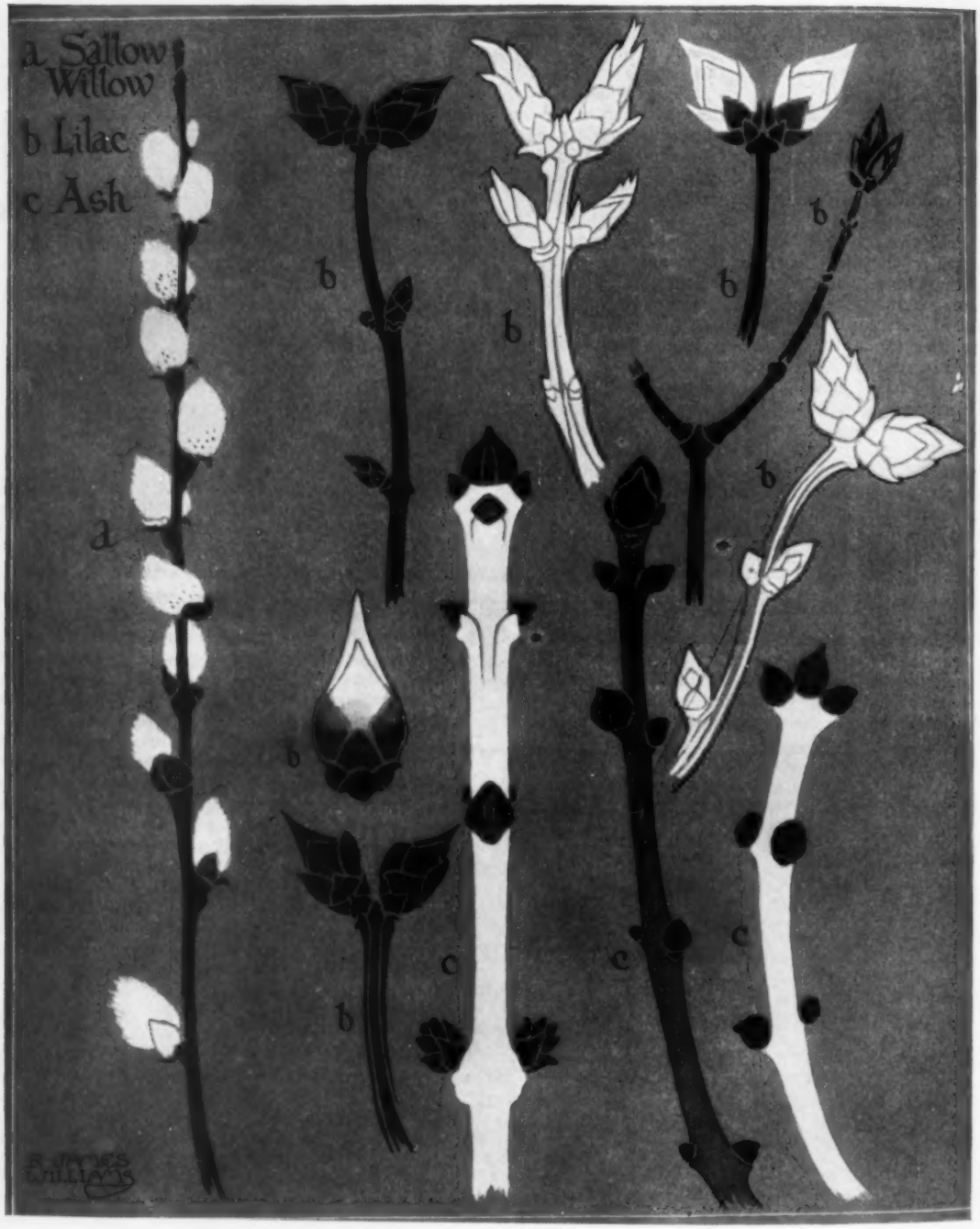
Fig. 6.

In most cases a study of the site upon which a building stands is essential to the thorough understanding of the structure, though it is only in recent years that this has been generally admitted. For this reason the above paragraph has been written. If a teacher has a number of boys with him when visiting a church or other building, by setting some to get a plan of the structure, others to pace the enclosure upon which it stands, others to study the various elevations, a good groundwork will be obtained, in one visit, for future more serious study of masonry and general details.

There is probably in this systematic study the likelihood that the spirit of the place will be overlooked, and it would be just as well to call attention to the impressions which the healthy-minded generally receive when visiting such scenes.

It is not likely that many children would profit much by attempting to make pictures, but it would be certainly wrong to discourage them; and most certainly a drawing by the teacher, either in colour or light and shade, could have but a wholesome influence, and would tend to raise the standard of execution among the children.

The second part of this paper will discuss some methods of studying architectural detail.



SUGGESTIONS FOR THE TREATMENT OF LEAF BUDS.

SOME CURRENT TOPICS FROM CONTEMPORARIES.

A RECENT issue of the *Schoolmaster* foreshadowed a most important change regarding the size of classes. It says :—

"In the letter which is to convey the request to the Board of Education for an interview some most encouraging statements are made. The Board will be told that the Council's ideal size of classroom is forty for senior scholars and forty-eight for infants, and that the Council has been working towards this ideal for some years past. In support of this statement the Board is referred to a schedule which shows that out of 253 classrooms in reconstructed buildings no fewer than 176 conform to the Council's ideal, while in the new schools included in the Council's present programme, containing accommodation for 20,000 children, no classrooms will be built to accommodate more than forty in a senior department or forty-eight in an infant department. The letter goes on to say that, bearing in mind the Board of Education's present maximum of sixty and the intention of the Board to secure reductions in the future, the Council has come to the conclusion that, as the Board and the Council are in harmony in the policy of securing reduction of the size of classes, they should endeavour to agree on the ultimate size of the class to be aimed at, the plan of bringing about that ideal, and the period of years within which such a reform should be carried out. This is excellent. Let London lead the way in securing classes of forty, and it will not be long before the rest of the country follows in its wake."

We can only hope this most desirable reform may be speedily accomplished. No subject of the school curriculum will benefit more than handwork. It may be possible to teach sixty children collectively a rule in arithmetic, but it is impossible to be the mentor and guide of sixty pupils all making individual efforts to express their ideas by drawing or other concrete handwork.

Mr. H. T. Bailey, the editor of that excellent journal the *School Arts Book*, whose enthusiasm for art and handwork is only equalled by his great energy, was recently lecturing before an American audience. Discussing the question as to whether the education in the public school of to-day really met the needs of the times, he says :—

"The discipline of the old self-supporting home is no longer in force ; the discipline of apprenticeship has disappeared ; the discipline of the public school, unsupported by its former allies, is pronounced inadequate. Is that so surprising ? With Crœsus dead in Syria and Pompey dead in Egypt, what can Rome do but worry Cæsar ?

"Upon the public school, then, has fallen the burden of supplying this 'practical,' 'old-fashioned' 'motor training.' Has the public school risen to the occasion ? Is it rising ? Can it, like Cæsar, rise to the august position of sole imperator, dictator, censor for life ? To the first of these questions I believe the public school itself must reply, 'I have not risen to the occasion ;' to the second it may answer, 'I am rising ;' and to the third—ah, there the players change ! It is the soothsayer now that whispers, 'The ides of March are come,' and I believe the public school can fling back the word, 'Ay, soothsayer, but not gone ;' for to-day the common people stand between their Cæsar and his foes.

"That the public school has not yet risen to the occasion we must all admit. As the Industrial Commission says, in the public school the child has come to be 'almost wholly separated from life.'

"As soon as Nature had brought the child to the point where he had gained complete control of his powers of locomotion, we teachers caught him and made him sit still six hours a day. As soon as he had learned to talk fluently, we told him he mustn't even whisper all day long. As soon as he could use his fingers and thumbs in a hundred skilful ways we took from him everything he tried to use in school except a pencil. We taught him to say, 'I see a dog,' when he saw nothing but hieroglyphics on a chart. We gave him dots and dashes, plus signs and radicals that he never saw in all creation except in school. We taught him to spell 'impenetrability' and 'pneumonia' before he had had experience of either. We took him off the surface of the earth and shut out his view of river and sky, and taught him geography from coloured diagrams. We cooped him in an ill-ventilated room, cramped him in an ill-fitting seat, made him drink from the same cup with a hundred others, let him leave the room at recess only, and then taught him hygiene from a book. When physics and chemistry were introduced they were presented in book form ; all his botany was Latin names ; he drew from copies ; he designed from dictation ; he had nothing but 'exercises' in manual training. In real life the rewards of his exploits were leadership, pennies, the stolen fruit, the ability to swim and dive, to play the game well ; the consequences of failure were lickings, scars, and juvenile poverty, wretchedness, and disgrace. In school the immediate consequences were almost wholly confined to per cents., and E's and G minuses, as inconsequential to the child mind as the value of X. He saw in real life that if people wanted to know things they asked their neighbours ; if a man got into trouble his neighbours helped him out ; that people copied from one another, traded with one another, wrote letters to one another. He found that in school it was a crime to 'communicate,' to 'prompt,' to 'copy,' to 'swap,' or to 'write notes.' And with all school literature, beginning with fables and ending with myths, what wonder that he came to look upon school life as 'not the real thing,' a sort of bad dream he had to endure five days in the week as cheerfully as possible ? What wonder that bright teachers, like the author of the Upton Letters, sometimes burst out with bitter words ? That honest man wrote :—

"'One sees arrive here every year a lot of brisk, healthy boys, with fair intelligence, and quite disposed to work ; and at the other end one sees depart a corresponding set of young gentlemen who know nothing, and can do nothing, and are profoundly cynical about all intellectual things. And this is the result of the meal of chaff we serve out to them week after week ; we collect it, we chop it up, we tie it up in packets, we spend hours administering it in teaspoons, and this is the end. And yet this preposterous system continues year after year.'

"Can we wonder over the growth of athletics, social functions, and secret societies in our high schools ? Those are the only things in modern classical high schools which from the pupils' point of view have any semblance of reality, any connection with life itself.

"Moreover, our schoolroom methods have fostered the growth of vicious habits. If a boy doesn't believe in his task, a 'study period' is a temptation to idleness. A prohibition which seems to him unreasonable is a temptation to do the deed. A class recitation in which he may have to recite or may not have to recite is a temptation to take the chance to gamble, to speculate on margins. A blackboard recitation places a premium upon the sidelong glance, stealing, bluffing. Ranking, marking, promoting upon the teacher's judgment alone, open the door to 'pull' and the spoils system. Government by the teacher rather than by school sentiment breeds irresponsibility, contempt for authority, skill in evading the law."

HONOURS PAGE.

THE successful pupils this month are:—

1. D. Cameron (14), Sunnyhill Road Council School, Streatham, S.W.
2. John P. Allan (13), West Dyke Council School, Redcar.
3. John Stewart (13), St. George's Road Public School, Glasgow.
4. Mary Street (12), St. Patrick's Roman Catholic School, Liverpool.
5. Ethel Brand (13), Loxford Girls' School, Ilford, Essex.

The following scholars' work was highly commended by the judges:—

Dorothy Finnis (13), Doris Anderson (14), Rita Satens (13), Edith Ryton (14), Alice Fillingham (14), Loxford Girls' School, Ilford; Stanley Hobden (12), Leonard Blackwell (12), Arlington National School, Berwick, Sussex; Kate Wass (15), Winnie M'Evoy (13), Collegiate School, Everton Valley, Liverpool; D. H. Mallard (13), D. Gifford (12), Bathforum School, Bath; Saville Walker (13), Northowram Council School, Halifax; Fred Wyatt (14), Trewirgie Boys' School, Redruth; Frank Guest (12), Windermere Road Council School, Leigh, Lancs.; Eva Worthy (11), Haxby Road Council School, York.

We are pleased to give again a page of colour to the honours awards. With the advent of the spring flowers we hope to see some good specimens of work in water colour or chalk. The crocus, daffodil, and tulip provide excellent material for colour studies, and the budding twigs give excellent scope for good pencil work. Miss Farman's helpful article in the current issue should give abundant suggestions for suitable studies. Drawings for this competition may be sent at any time, addressed to J. Vaughan, 7 Campside Crescent, Langside, Glasgow. They must (1) be packed flat; (2) have the scholar's full name, age, and school address on the back; (3) be original, and not copies of other drawings. The prize-winners each receive a box of colours. Drawings cannot be returned. These rules are very simple, but competitors often fail to keep them.

EDITORIAL NOTES.

A NEW feature is commenced in this issue, under the title of "Art in the Manual Training Room." Similar examples will be given month by month, and the endeavour will be constantly to show how woodwork models may be simple in form and construction, yet artistic in effect—both very valuable features of all good craftsmanship.

The following interesting announcement is given in the *London County Council Gazette*:—

"LONDON CENTRAL SCHOOLS.

"The new system of central schools will be established by the Council to give an educational course not hitherto generally provided in either elementary or secondary schools. Generally speaking, the central schools will replace the existing higher elementary and higher grade schools, they will receive pupils at the age of eleven from surrounding contributing elementary schools, and will, as a rule, be carried on under the ordinary regulations of the Board of Education for elementary schools. Central schools will provide courses of instruction extending over four years; all girls will go through an approved course of domestic economy, and all boys through an approved course of manual instruction.

"It is contemplated that the curriculum should be framed with a view to the pupils leaving between the ages of fifteen and sixteen; that the courses of instruction should be organised to provide for the pupils the best possible equipment for entering upon the industrial or the commercial world as soon as they leave school, while at the same time qualifying them to commence some special course of technical training at a polytechnic or similar institution if they desire to continue their education further. The Council intends that central schools shall give their pupils a definite bias towards some kind of industrial or commercial work, while ensuring that their intelligence shall be fully developed, and proposes that the schools shall be treated as schools of a non-local character."

The progress of these schools will be closely watched by all interested in the development of the practical side of education. We hope they will really show that "handwork is brainwork," and that the scholars leaving them will prove alert, intelligent, and adaptable in whatever occupations they may afterwards follow.

Following on the recent appointment by the Board of Education of Mr. John Cooke as Inspector of Handwork, the promotion of Mr. Tryhorn of Liverpool to a similar position is particularly gratifying. Both these men have laboured long for the cause of handwork, and the teachers of the districts where they work may be sure of getting helpful constructive criticism in all matters pertaining to educational handwork.

It is with great regret that we learn that Sir Harry Reichel has been ordered abroad for a long rest. We sincerely wish him a speedy recovery. Though his duties as Vice-Chancellor of the University of Wales are no sinecure, yet he finds time to act as Chairman of the Board of Examinations for Educational Woodwork, and to lecture on the value of handwork before various associations.

HONOURS PAGE.

PRIMARY SCHOOL DRAWING.

THE CORRELATION OF EDUCATIONAL HANDWORK.

[The following notes, taken from the *Educational News*, will be read with great interest in conjunction with Miss Farman's article.]

The "Scheme of Work."

WITH the steady progress in our educational outlook there has developed a marked advance in the methods of teaching. In few subjects has this improvement been seen to greater advantage than in drawing. We now find that the most vital importance is attached to the "Scheme of Work," which will prove an educational factor in the child's school life, and at the same time help to correlate the other subjects of the curriculum. It is this point which is exercising the minds of those educational authorities that are appointing specialists to visit the schools in their district in order that the class teachers may have that expert guidance so necessary for the successful treatment of the subject. In framing a scheme of work in drawing suitable for the primary school, "colour" should be given an important place.

In the Infant School.

The early lessons in colour-drawing in the infant department should aim at training the child to recognise certain colours and their value. In every school there should be a large and varied assortment of coloured wools. If these were handed round the class, each child might be asked to pick out "yellow," "red," and "blue," thereafter selecting "green," "violet," and "orange." At this stage teachers should be on the lookout for colour ignorance, so that it might be removed at the earliest possible moment. At an equally early stage we must make a commencement with training the eye to a sense of proportion. The children will gladly bring some of their coloured balls, from which the teacher can select some of different sizes. These the pupils should be asked to draw as near as possible to their relative sizes, commencing with a dot, and working them out in mass. Large blue envelopes of various sizes will serve as models for the square and oblong. For the preliminary lessons teachers would be well advised to use white chalk on the "freearm" board, or on a sheet of brown paper. As a change, the children will welcome coloured crayons and tinted paper.

Some Suitable Models.

The common vegetables and fruits can be obtained at almost any season of the year. Carrots, turnips, oranges, pears, bananas, and such like provide us with a vast variety of interesting models. Care must always be taken to see that these are placed against a strong contrasting background, so that there may be no difficulty in seeing the colour. As a most useful hint, the teacher might indicate on the blackboard the difference in shape between, say, an apple and an orange. Thus would the scholars' eyes be opened to the typical shape of each. In flowers we should confine ourselves to the simplest forms—the buds—always remembering to draw them to a large scale.

Flags and Toys as Models.

For a lesson on "colour" few models will be found more interesting than the flags of the nations. Having sketched the flag lightly in pencil, the scholars ought to select the colours which will give a correct reproduction. We cannot impress too strongly upon teachers the advantage of making the drawing lesson in the infant department as much as possible play work. Thereby the child's interest is stimulated. With the greatest readiness the brightly-coloured toys will be brought to school, and the teacher can find no better models for the pupils than the horses, trains, boats, animals, etc., with which they pass their hours of play. But due heed must be taken that the easiest are chosen and placed in the simplest positions possible. The drawing should first be made in pencil, and thereafter coloured with the crayons. While we have every sympathy with kindergarten work, we do not think it ought to occupy a too prominent position in the scheme of work in the infant school. Indeed, experience has convinced us that it should not be extensively introduced till the scholar is on the point of entering the junior division.

ART IN THE MANUAL TRAINING ROOM.

SUGGESTIVE MODELS.—I. A WATCH STAND.

BY W. H. RODGER.

THIS model is made of teak, and should be left unvarnished, as the surface gradually assumes a beautiful rich dark-brown colour if left exposed to the atmosphere.

All the joints are plain "butts" held together by means of glue and screws. The sides are made slightly thicker than the front and back to assure good screwing.

The special decorative features in this model are the square-headed brass screws and the bossed zinc shield set with a ¾" diameter light-blue Ruskin stone.

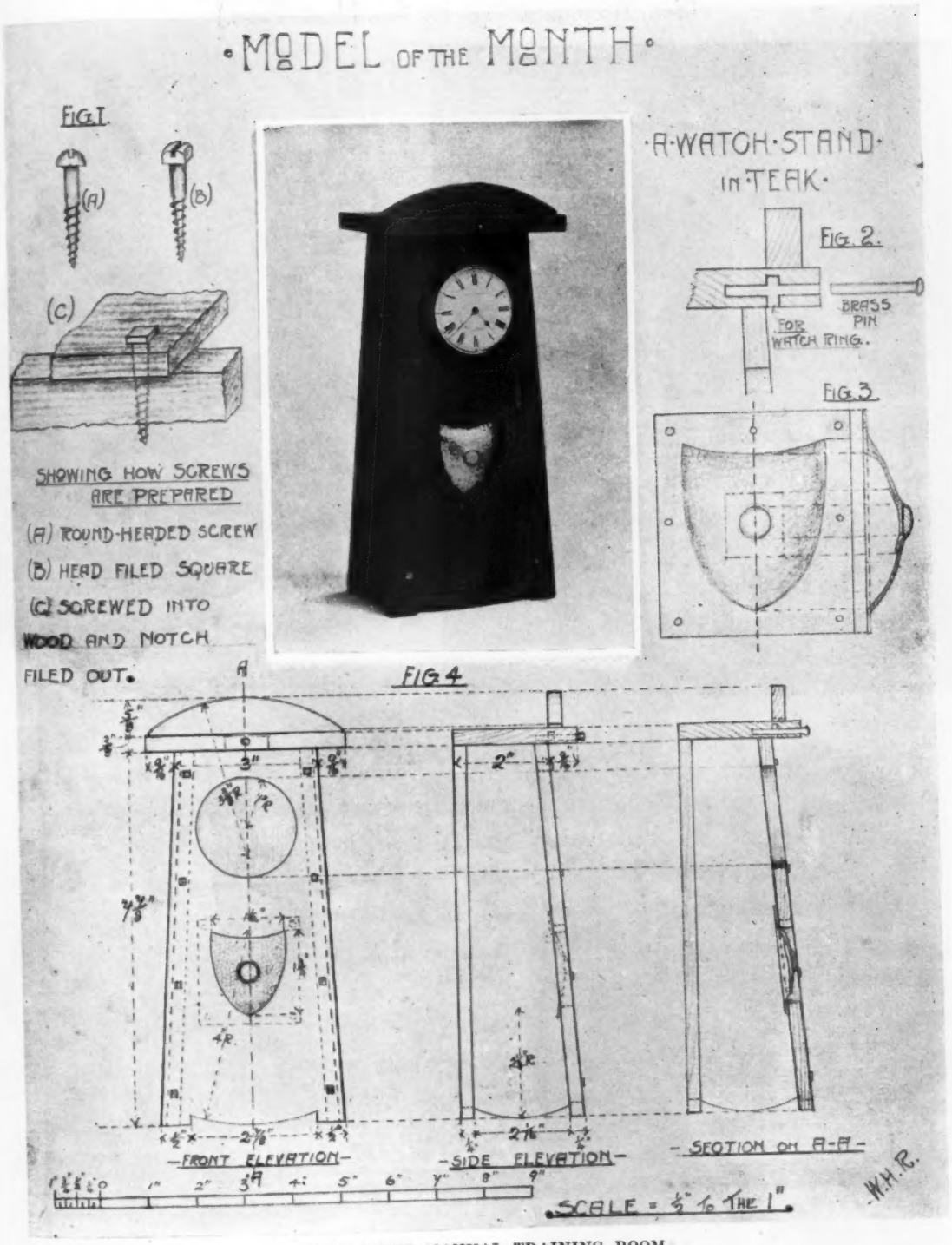
Fig. 1 explains how the screws are prepared.

Fig. 2 shows the arrangement for holding the watch in position.

Fig. 3 shows an elevation and section of the bossed shield, the preparation of which, however, requires some further explanation. Cut out a piece of zinc—No. 24 S.W.G.—large enough to obtain a hold all round the opening. On a spare piece of wood cut out carefully the exact shape of the shield. Place the zinc over this opening, allowing an equal margin, and with a pear-shaped mallet beat down gently all round, working well into the edge of the wood. When the metal has been shaped sufficiently, it is hammered on the face with the ball end of a *repoussé* hammer. A hole is next bored in the centre, a little less than the size of the Ruskin stone, bossed out slightly from the back, and filed to a sharp edge to make a close joint between the metal and the stone. The stone is placed in position and a back soldered on to keep it secure. The zinc is now polished, warmed, and lacquered, when it will keep bright like silver. Holes for screws are next bored, and the shield is ready to screw into its place.

Fig. 4 shows the model in use.

All necessary particulars for the making of the model are given in the working drawings.



ART IN THE MANUAL TRAINING ROOM.

OUR LITERARY COMPETITION.

(See Announcement on the Next Page.)

The Practical Teacher
Literary Competition

FOR WRITERS OF SHORT STORIES.

First Prize . . FIVE GUINEAS.
Second Prize . THREE GUINEAS.
Third Prize . . TWO GUINEAS.

A New Scheme.

THE proprietors of this journal are particularly anxious that no distinctive talent among its readers should remain hidden and unrecognised for lack of such help and encouragement as a paper like "The Practical Teacher" can afford. With the aid of the International Correspondence Schools, they have recently been the means of helping a large number of teachers who wish to prepare themselves for imminent changes in the curriculum of our schools, and hundreds of progressive educationists can now testify to the excellence of the instruction imparted by the above-named institution. It is now the turn of those teachers who possess the pen of the ready writer, but have no taste for technical subjects, and the following scheme has been devised for their particular benefit.

Teacher Novelists.

A cynic remarked a short time ago that teachers ought to be adepts at fiction, seeing that they include history in their subjects of instruction! Be this as it may, the fact remains that some of our best writers of fiction have been, directly or indirectly, connected with the profession. There are other mute, inglorious Yoxalls waiting to be discovered, and we mean to find them out if possible. We shall not for the present, however, venture upon a complete novel, but shall begin with the Short Story.

Our Offer.

We offer a Prize of Five Guineas for the best Short Story written by a teacher. Competitors must be acting members of the profession, engaged in regular instruction in a recognised school within the Empire.

The Story must contain not less than 2,000 and not more than 4,000 words. The subject is immaterial. Competitors may send in:

1. Love Stories.
2. Loveless Stories.
3. Stories *of* Children.
4. Stories *for* Children.

The latest date for sending in MS., which must be typed, is April 30. The result of the Competition will be announced in the issue of "The Practical Teacher" to be published on May 25.

A Prize of Three Guineas is offered for the story adjudged to be Second in order of merit, and a Prize of Two Guineas for the story taking Third place.

The three winning stories will be published in the June and July issues of "The Practical Teacher."

A Real Opportunity.

Teachers are hereby informed that the Editor of this journal wishes to discover really capable writers of Short Stories, with a view to offering them work in other directions, in connection with the publication of books for young people. A word to the wise is

sufficient. Some writers find it a help to be provided with a picture which will assist the imagination, and the process of writing up to an illustration of this kind is in itself highly interesting. We have, therefore, printed four pictures on page 628 of this month's issue, any one of which can be used, *if the competitor wishes*, for this purpose. This matter is, however, left entirely to the writer's option, and stories written up to these particular illustrations will be judged solely upon their intrinsic merits.

Rules to be Observed.

The first sheet of each Competitor's MS. must bear the following particulars, clearly set forth, and nothing else must appear on this covering sheet. (If this rule is not observed, the Competitor will be disqualified.)

I. Competitor's Full Name (lady to state whether Mrs. or Miss) and professional status.
II. Name of School.
III. Competitor's Private Address.

On this covering sheet must also be gummed or pasted the coupon cut from the back cover of "The Practical Teacher" for March and April respectively. Envelopes must be endorsed "'Practical Teacher' Literary Competition."

A Request.

Regular readers of "The Practical Teacher" who do not care to enter for this Competition are asked to make it known to friends who are not yet subscribers to this journal. The contest will be very strictly confined to the teaching profession, in order to give a real opportunity to literary aspirants who have not yet appeared in print.

It must be distinctly understood that the copyright of each story sent in becomes the property of the Proprietors of "The Practical Teacher," and that the decision of the Editor in the matter of adjudgment is final. No correspondence can be entered into regarding the merits or demerits of the stories selected for award.

RELIGION, MORALS, AND MANNERS.

A COURSE OF BIBLE TEACHING FOR THE SCHOOL AND HOME.

BY J. EATON FEASEY, HEADMASTER OF THE RANMOOR SCHOOL, SHEFFIELD (UNIVERSITY DEMONSTRATION SCHOOL), A LECTURER IN EDUCATION IN THE SHEFFIELD UNIVERSITY.

V.

THE BIBLE AND THE BODY.

IT can hardly be possible to over-emphasise the fact that the body is not the person, and that it is a cardinal mistake to think of it and its needs to the exclusion of the real self. Imagine a brave, stalwart, gay young soldier galloping cheerfully towards the enemy—a picture of life and health and vigour. But suddenly a rifle bullet pierces his heart: he reels in the saddle, falls, and dies. As one looks upon him now one recognises instinctively that this is not "he;" it will be called his "corpse," his "remains," his "body." But the "man" has fled; only the "tent" in which he lived remains. The *person* has gone, and this that is left is by far the less important part—a part by much inferior to that which has left it.

There is, however, some danger that because of reflections like these the importance of the body should not be recognised. Too often it has been thought that religion was concerned *only* with the soul, and the body has been neglected and despised and even maltreated. It is worth while, therefore, to see what the Bible has to say of the body, and what is its teaching with regard to its treatment and care. A collection of the passages bearing on the subject at once brings home the fact that this part of us is by no means neglected in the Scriptures. To begin at the very beginning, we may take the account given, in the great "Hymn of Creation," of the origin of both body and soul.

"And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. So God created man in his own image, in the image of God created he him; male and female created he them. And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth" (Gen. i. 26-28).

"And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul" (Gen. ii. 7).

The teaching of this is, evidently, that not only is the soul—the "breath of life" in us—imparted by God, but that our bodies also are His handiwork, being formed by His power out of the same elements as the earth, the soil, the dust around us. And the beauty and marvellous mechanism of the body suggest the same thing. The works of man are poor and feeble compared with this. The photographer's camera is but a clumsy imitation of the eye of an animal; the working of the brain and nervous system is ten thousand times more marvellous than the electric telegraph; there is more to admire in the little finger than in the most elaborate machinery ever made. We are indeed, as the Psalmist said, "fearfully and wonderfully made."

It would seem to follow naturally from this that as our bodies are *God-made* we cannot hope to please Him by mutilating them, but rather that it will be an offence to Him, a sin, not to take the greatest care of them. As the most wonderful and beautiful of all His works around us, we must treat it as a sacred trust from Him. Perhaps of all the gifts or "talents" with which we have been entrusted, this is the one of which we shall most strictly have to give an account.

In very many places, directly and indirectly, this care of the body is inculcated. For example, the fourth commandment is expressly designed in the interests of the body. It provides that it shall have recurrent periods of rest; and the prohibition of overwork is extended not only to a man's children and servants, but even to his cattle and beasts of burden.

"Remember the sabbath day, to keep it holy. Six days shalt thou labour, and do all thy work: but the seventh day is the sabbath of the Lord thy God: in it thou shalt not do any work, thou, nor thy son, nor thy daughter, thy manservant, nor thy maidservant, nor thy cattle, nor thy stranger that is within thy gates: for in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day: wherefore the Lord blessed the sabbath day, and hallowed it" (Ex. xx. 8-11).

"The sabbath," said Jesus Christ, "was made for man." And it is obvious that this was not solely that he might have opportunity for worship and soul-culture, but also that his body might rest and be recreated. Bodily health is everywhere in the Bible spoken of as a blessing. Frequently it is promised as a reward of hearty service for God; whilst sickness, disease, premature death, are specified as the results of sin and wickedness. The "good time coming," when God's will is done on earth as it is in heaven, is anticipated as a time of longevity, of freedom from sickness and pain. Isaiah has a glowing passage depicting this good time when human society is arranged on God's basis. Infant mortality, blighting disease, death in the prime of one's days—these will all be memories of the past. "The promise," says one, "of bodily health as a special feature of the kingdom of God is a much-neglected truth." Isaiah's great vision is a passage exceedingly well worth memorising:—

"For, behold, I create new heavens and a new earth: and the former shall not be remembered, nor come into mind. But be ye glad and rejoice for ever in that which I create: for, behold, I create Jerusalem a rejoicing, and her people a joy. And I will rejoice in Jerusalem, and joy in my people: and the voice of weeping shall be no more heard in her, nor the voice of crying. There shall be no more thence an infant of days, nor an old man that hath not filled his days: for the child shall die an hundred years old; but the sinner being an hundred years old shall be accursed. And they shall build houses, and inhabit them; and they shall plant vineyards, and eat the fruit of them. They shall not build, and another inhabit; they shall not plant, and another eat: for as the days of a tree are the days of my people, and mine elect shall long enjoy the work of their hands. They shall not labour in vain, nor bring forth for trouble; for they are the seed of the blessed of the Lord, and their offspring with them. And it shall come to pass, that before they call, I will answer; and while they are yet speaking, I will hear. The wolf and the lamb shall feed together, and the lion shall eat straw like the bullock: and dust shall be the serpent's meat. They shall not hurt nor destroy in all my holy mountain, saith the Lord" (Is. lxv. 17-25).

This is the kind of teaching given in the Old Testament. When we come to the New, and consider that of Christ and His apostles, the emphasis increases. It is of interest to notice that we nowhere read of Jesus Christ being ill. Tired He was, and weary to a degree, but there is no mention of sickness concerning Him. Dean Farrar speaks thus of Him:—

"His was a life of health; among its many sorrows and trials sickness alone was absent. We hear of His healing multitudes of the sick, *never* that He was sick

Himself. Certain it is that the story of His life and death show exceptional powers of physical endurance. No one who was not endowed with perfect health could have stood out against the incessant and wearing demands of such daily life as the gospels describe. Above all, He seems to have possessed the blessing of a ready sleep. Even on the wave-lashed deck of the little fishing-boat He could sleep, with no better pillow than the hard, leather-covered boss that served as the steersman's cushion. And in the last sad scenes the same strength of constitution and endurance, even after all that He had undergone, enabled Him to hold out, after a sleepless night and a most exhausting day, under fifteen hours of trial and torture and the long-protracted agony of a bitter death."

It is very significant to notice how very largely He devoted Himself to warring against disease of the body. A list of the diseases which He cured would include blindness, dumbness, palsy, paralysis, insanity, fever, etc. Day after day the sick and halt and blind, and those who were sick of all manner of diseases, were brought to Him, and "He healed them all." This imposes the same warfare against sickness on His disciples who would follow His example. Moreover, His specific teaching lays on us the same duties.

"When the Son of man shall come in his glory, and all the holy angels with him, then shall he sit upon the throne of his glory: and before him shall be gathered all nations: and he shall separate them one from another, as a shepherd divideth his sheep from the goats: and he shall set the sheep on his right hand, but the goats on the left. Then shall the King say unto them on his right hand, Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world: for I was an hungred, and ye gave me meat: I was thirsty, and ye gave me drink: I was a stranger, and ye took me in: naked, and ye clothed me: I was sick, and ye visited me: I was in prison, and ye came unto me. Then shall the righteous answer him, saying, Lord, when saw we thee an hungred, and fed thee? or thirsty, and gave thee drink? When saw we thee a stranger, and took thee in? or naked, and clothed thee? or when saw we thee sick, or in prison, and came unto thee? And the King shall answer and say unto them, Verily I say unto you, Inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me. Then shall he say also unto them on the left hand, Depart from me, ye cursed, into everlasting fire, prepared for the devil and his angels: for I was an hungred, and ye gave me no meat: I was thirsty, and ye gave me no drink: I was a stranger, and ye took me not in: naked, and ye clothed me not: sick, and in prison, and ye visited me not. Then shall they also answer him, saying, Lord, when saw we thee an hungred, or athirst, or a stranger, or naked, or sick, or in prison, and did not minister unto thee? Then shall he answer them, saying, Verily I say unto you, Inasmuch as ye did it not to one of the least of these, ye did it not to me. And these shall go away into everlasting punishment: but the righteous into life eternal" (Matt. xxv. 31–46).

Here the fact is foreshadowed that at the great day of judgment the judgment will be given largely upon the attitude and action we have taken towards the bodily afflictions and necessities of others. What Christ did we are to do. The feeding of the hungry, clothing of the naked, nursing of the sick, are imposed as ordinary Christian duties, neglect to fulfil which will ensure censure and condemnation. Later teaching in the epistles declares solemnly that our bodies are temples of the Holy Ghost, and that if any man shall defile those temples "him will God destroy."

Here, then, is the teaching of the Bible. Our bodies are gifts to us from God. We are to regard them as temples of the Holy Ghost. We must care for them as God's handiwork. We have responsibilities towards the bodies of others: the Christian must strive for the health of the community, the common weal of the nation. Then, fulfilling God's will, which is our law, we may look forward to the land of health, where "there shall be no more sorrow, nor pain, nor death" (Rev. xxi. 4); and where, "in the midst of the street, and on either side of the river, there grows the tree of life, whose leaves are far the healing of the nations" (Rev. xxii. 2).

"THE LIVING TEMPLE.

"Not in the world of light alone,
Where God has built His blazing throne;
Nor yet alone in earth below,
With belted seas that come and go,
And endless isles of sunlit green,
Is all thy Maker's glory seen:
Look in upon thy wondrous frame—
Eternal wisdom still the same.

"The smooth, soft air with pulselike waves
Flows murmuring through its hidden caves,
Whose streams of brightening purple rush,
Fired with a new and livelier blush,
While all their burden of decay
The ebbing current steals away;
And, red with Nature's flame, they start
From the warm fountains of the heart.

"No rest that throbbing slave may ask,
For ever quivering o'er its task;
While far and wide a crimson jet
Leaps forth to fill the woven net,
Which, in unnumbered crossing tides,
The flood of burning life divides;
Then, kindling each decaying part,
Creeps back to find the throbbing heart.

"But, warmed with that unchanging flame,
Behold the outward moving frame,
Its living marbles jointed strong
With glistening band and silvery thong;
And, linked to reason's guiding reins
By myriad rings in trembling chains,
Each graven with the threaded zone
Which claims it as the master's own.

"See how yon beam of gleaming white
Is braided out of seven-hued light;
Yet in those lucid globes no ray
By any chance shall break astray.
Hark! how the rolling surge of sound,
Arches and spirals circling round,
Wakes the hushed spirit through thine ear
With music it is heaven to hear.

"Then mark the cloven sphere that holds
All thought in its mysterious folds;
That feels sensation's faintest thrill,
And flashes forth the sovereign will.
Think on the stormy world that dwells
Locked in its dim and clustering cells,
The lightning gleams of power it sheds
Along its slender, glassy threads.

"O Father, grant Thy love divine
To make these mystic temples Thine!
When wasting age and wearying strife
Have sapped the leaning walls of life,
When darkness gathers over all,
And the last tottering pillars fall,
Take the poor dust Thy mercy warms,
And mould it into heavenly forms."

OLIVER WENDELL HOLMES.

A USEFUL VOLUME.

We have much pleasure in drawing attention to the third edition of Evans' *Recipe Cookery Book*, published by Evans Brothers, of Byron House, Fleet Street, E.C., at the modest price of one shilling. The recipes have stood the most severe of all practical tests. They are simply and clearly expressed, printed in large open type, one on each page (an innovation, surely, for a book of this kind), and combine variety with cheapness of production. The book is divided into eight sections, so that reference is easy. Altogether it is one of the best books of the kind that we have seen.

Papers for Teachers of Infants.

A TALE FOR THE STORY HOUR.

THE CAPTIVE PIXY.

A Tale of Dartmoor.

BY MARIE BAYNE.

FAR on lonely Dartmoor, in the heart of beautiful Devon, there lived, once upon a time, an old schoolmaster and his wife.

The schoolmaster's name was Johnny Norris, and he had no fine schoolhouse such as we see nowadays; neither had he any fine desks and forms, nor a fine big salary to keep him cheery.

Instead of this he kept school in his own little kitchen; his pupils tramped weary miles across the moor to learn lessons from him; and as for school fees, Johnny made no charge, but took what they cared to give.

Sometimes a boy would come laden with a slab of peat for the fire, or a girl would bring him a couple of eggs for breakfast. Sometimes a farmer sent a flitch of fat bacon or a sack of potatoes to keep them from want. But of hard cash poor Johnny got scarcely a penny, and one cannot exist altogether on potatoes and peat.

There was nothing for it but that his old wife should help to eke out a living; and so it came about that she went here and there doing other folks' washing.

Now Nannie Norris was as brave a soul as could be found in Devon. She had no fear of either man or beast, nor even of the "pixies," as fairies are called down there. To and fro across the moor, at all hours and in all weathers, went cheerful old Nannie, often setting out at daybreak and not returning until dusk.

Yet you must not think Nanny despised the pixies, or did not believe in them. Far from it. It was her old husband who laughed, and declared there were no such things at all. Nannie did not agree with him, only she was by nature blithe and fearless.

Well, one evening after sundown Nannie Norris made ready to go home. She had been washing all day at a distant farm, and great screens of sweet-smelling linen stood airing by the fire.

"You have worked hard, Nannie," said the mistress as she paid her. "See, here is a spring chicken for 'ee and the goodman."

So saying, she gave Nannie a large market-basket containing the gift; and with many a curtsy the grateful old woman took leave.

Off she trudged across the now darkening moor, thinking of the work she had done that day, and of the pleasant meal she and Johnny would have to-morrow; but thinking not at all of pixies or their giddy pranks, when all at once, as she drew near the bridge which spans the Blackabrook river, she espied a queer little figure leaping and dancing along the path.

It was deep twilight by this time, so that Nannie could not see him plainly; but he seemed to be a trig little fellow, about eighteen inches in height, dressed in tight pantaloons and a coatee of faded green. She had not a doubt that this was a pixy, and in spite of herself her heart gave a queer little thump.

The figure bounded on towards the bridge, and the question was, should she turn and go back to the farm, or should she go on and risk being "pixy-led"? For, as every one knows, if the fairies can manage it, they will lead you astray on the moors. Sometimes their victims will wander in the mists for hours at a time, and sometimes people have even lost their lives by falling into a bog. Oh, indeed it is no laughing matter to be "pixy-led!"

Remembering this, Nannie had half a mind to go back; but then she thought of her Johnny at home, and how sad and anxious he would be if she did not appear.

"Drat the pixy!" said Nannie to herself. "I an't afraid o' he, or o' nothing else!"

So she turned her pocket inside out, for this is a great safeguard against fairies; then, setting her teeth and tilting her chin, she walked boldly on.

When she got to the bridge, the pixy was there before her, leaping from side to side as if to prevent her crossing. But Nannie's mind was made up: she meant to get home. With steady resolve she planted both feet upon the bridge; and when the pixy still worried her by leaping about, she all at once seized him by the collar of his coat and popped him into her basket. This done, she fastened the lid securely and went on her way, thinking that, instead of being "pixy-led," she would now lead a pixy!

The basket was a large one; but then the pixy was a fair size too, and, crushed in beside the spring chicken, he had no room for his antics. So the captive lay still in his prison, and Nannie Norris trudged on with her double burden.

Though still he was by no means silent, but chattered and screamed in the most outlandish jargon. Nannie could not understand a word he said, but it made her blood run cold to listen to him; and more than once she was tempted to fling her basket—pixy, spring chicken, and all—into the Blackabrook river.

But then she thought of her wise old husband, and how often and often he had scoffed at the tales of the pixies. What a triumph it would be for her if she brought home one in her basket!

So she gripped the handle more tightly still, and pushed across the moor. She pictured the light in their cottage window; it would not be long now till it came in sight. But before reaching home she must pass by the "Pixies' Tor," a great rock rising up like a tower upon the moor.

As she drew close to this rock the captive pixy became silent. Nannie thought he must have fallen asleep, and she was thankful to have peace from his chatter. Passing the tor, she fancied she heard the sound of voices, and at length one called quite clearly from within the rock, "Modilla! Modilla!"

"Podilla!" screamed the pixy in the basket, and Nannie almost swooned with fright.

"Modilla!" repeated the voice, still more earnestly.

"Podilla!" echoed the captive; and then there was silence once more.

They were past the Tor; but now Nannie's basket felt strangely light, and she began to grow anxious. What if the pixy had supped off her fat spring chicken? Oh, what a waste of good victuals that would be!

At length she could bear such doubts no longer; she must see what was going on. So, raising the lid ever

so slightly, Nannie Norris peeped into the basket. There lay the spring chicken safe and sound; but, alas, the pixy was gone!

Then Nannie Norris went sadly home to her Johnny. She knew, of course, that a fairy can make himself small at will, and guessed that he must have escaped through the wicker bars of her basket. Ah, if she had but been more watchful while passing the Pixies' Tor!

For, alas, Nannie also knew that, without some proof, neither Johnny nor any one else would believe that she had captured a pixy!

NUMBER-TEACHING IN THE INFANTS' SCHOOL.

BY HELEN B. JOHNSTON.

FORMAL teaching of number in the lower classes of the infants' school becomes more and more a thing of the past. In the place of number in these classes one now finds building, shell-placing, bead-threading, stick-laying. These materials are used to make the common objects of the child's everyday life, to illustrate Nature and story lessons. In this way children gain some idea of number. For example, they count the bricks, the beads, the sticks as they use them; they get some idea of ones and twos by arranging the bricks, by threading the beads.

A favourite lesson in these classes is the making of number pictures. These pictures illustrate easy numbers, and may be done by the teacher or by the children. A little story is woven to connect the various pictures. If the pictures are done by the children, only the simplest objects are introduced into the story—for example, balls, apples, oranges.

In the upper division of the fives class, and in the first class, formal number is introduced to some extent. Concrete materials—such as bricks, sticks, shells, counters, bead-frames—are still used; but easy mental problems are introduced, and the concrete material is occasionally dispensed with in the working of these problems. Again, in these classes figures and signs are connected with the numbers that they represent. In the first class the question of tens and units has to be dealt with. The following method has been found very successful in the teaching of tens and units:—

The components of 10 are learned by means of sticks, shells, bead-frames, and the results tabulated on the blackboard. These components form a kind of drill. When they are well known, the 10 is taken as the basis and numbers added to it. For example, $10 + 1 = 11$; $10 + 2 = 12$. Subtraction is taken at the same time. For example, $11 - 1 = 10$; $12 - 2 = 10$. As before, concrete material is used and results are tabulated on the blackboard.

The children are then ready for the lessons bearing most directly on tens and units. Ten sticks are given to each child. Children count them. How many sticks have you? How many ones? A rubber band is supplied to children, and the sticks are fastened in a bundle. How many sticks in bundle? How many ones? How many bundles? How many tens? Which would you rather have—10 ones or 1 ten? In this way children gain some idea that 10 ones are the same as 1 ten. This point needs special emphasis.

An additional stick is then given out to each child. This stick is not added to bundle. How many sticks in bundle? How many on desk besides? How many altogether? How many tens have you? Show the 1 ten. How many more have you? Children thus learn that 1 ten and 1 one make 11. (The term unit may be used in place of one if preferred.)

One ten + 2 ones = 12, 1 ten + 3 ones = 13 may then be dealt with.

The next series of lessons has reference to the setting down of numbers involving tens and units. Ten sticks are given to each child. Children count sticks. One child is called on to write figure 10 on the blackboard.

Children then make sticks into a bundle by means of rubber band. How many tens? How many ones besides?

Children then given 2 more sticks. (It is better to avoid in No. 11 the first lesson or two.) How many sticks now? How many tens? How many ones besides? Call on child to write figure 12 on blackboard. Show your 10 sticks. Show figure which stands for 10. Now, if you want 12 sticks instead of 10, how many must you add to the 10? If you want to make figure 10 into figure 12, what must you do? Show the sticks the 2 stands for. How many ones in 2? Now show the sticks that 1 stands for. How many tens in bundle? How many ones in bundle?

By repeating such exercises children will see that the 1 represents the 1 ten and the other figure the ones.

If desired, the fact that the tens figure is on the left and the units figure on the right may be pointed out and emphasised; but if any confusion is likely to arise in children's minds, it should be avoided, for a time at any rate.

In all these lessons it is well to go slowly. Repetition without monotony is the surest basis of success.

THREE BOOKS FOR THE ENGLISH TEACHER.

DR. SAINTSBURY'S *Manual of English Prosody* (published by Messrs. Macmillan, 5s.) will be found useful to those who believe that children should be led to appreciate the music of poetry. A study of this comprehensive work will help to make the literature hour a time of delight, for the teacher will be able to interpret the very soul of the poet. The student of English will need the book constantly at his elbow.

At one time it was difficult to obtain a good anthology suited to primary schools. The reproach has been removed, and among many excellent selections Mr. E. Arnold's new publication, *The Poet's Realm* (edited by H. B. Browne, M.A.), will find a place. The selections are arranged chronologically, and cover a wide field, embracing all classes of the poet's art. We should have liked to see some illustrations to assist the child's imagination.

Messrs. Blackie send us Books I. and II. of a series entitled *Picture Composition*, by Lewis Marsh, M.A. They are suited to the middle classes of an elementary school. The course in each book is extensive, and more than adequate for a year's work. The lessons centre round the excellent pictures provided; but this plan seems to limit unnecessarily the scope of the composition exercises. Mr. Marsh gives several passages printed entirely in small letters, in order that the pupil may insert the proper capitals and stops. For young children this type of exercise often inculcates the fault which it is intended to correct. Used with discrimination, however, these handbooks should lead to systematic teaching.

A CHILD'S MORNING OR EVENING HYMN.

Words by ISAAC WATTS. *Music by* C. E. PARKINSON.

mf
rall. e dim.
Ped. * Ped. * Ped. *
Andante con espressione.
p
1. Great God, how end - less is Thy love! . . . Thy gifts are ev' - ry morn - ing
Legato.
Ped. * Ped. * Ped Ped. Ped. *
new, . . And morn-ing mer-cies from a-bove Gen - tly dis - til like ear - ly dew.
Fine.
rall. pp
Ped. * Ped. * Ped. Ped. *
After 1st & 2nd Verses.
mf
dim.
Ped.

2. Thou spread'st the curtains of the night,
Great Guardian of my sleeping hours!
Thy sovereign word restores the light
And quickens all my drowsy powers.

3. I yield my powers to Thy command,
To Thee I consecrate my days;
Perpetual blessings from Thy hand
Demand perpetual songs of praise.

Our Needlework Column.

BY J. A. FLEMING, AUTHORESS OF "COMMON-SENSE NEEDLEWORK."

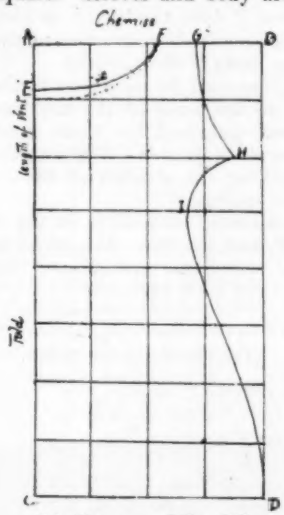
COMMON-SENSE COMFORTABLE CLOTHING FOR CHILDREN.

A Girl's Chemise.

(Eight to ten years.)

ONE and three-quarter yards 30″ calico.

Drafting the Pattern.—Girls' chemises are wider in proportion to the length than women's. The pattern is usually a *square*. Sleeves and body are cut in one.



8 to 10 years. 24″ × 24″.

The pattern submitted can be adapted to any size of garment up to a length of 36″. For a larger size the *length* only will need to be increased, as the width will equal any length up to 39″.

To get the length, measure from the top of the shoulders to just below the knee. The width will, of course, be the same. For a child eight to ten years of age a square of 24″ will be sufficient. Take a *double* square of paper with the fold coming along the top.

Fold the paper three times each way, which will make 8 squares in each direction.

Open the paper out, as in the diagram, in order to draw *half* the chemise.

Mark the corners A, B, C, D.

From A mark E $\frac{7}{8}$ down.

From A mark F $2\frac{1}{8}$ in.

Draw a curve from E to F.

From B mark G $1\frac{1}{8}$ in.

From B mark H 2 down and $\frac{1}{2}$ in.

Draw a curve from G to H.

From B mark I 3 down and 1 in.

Draw a curve from H to D, passing through I, and touching the outside line for almost the whole of the bottom square.

N.B.—The side seam is kept quite straight at the bottom of chemises and nightdresses for a distance of from 2″ to 3″, to allow the hem to be turned up evenly all round. By so doing the sharp corner so often seen is obviated, and the hem is easier to fix.

The front of the chemise is cut a little lower than the back. The slope is indicated by the dotted line.

The vent is cut down $1\frac{1}{2}$ divisions in the middle of the front, if an opening be required. Cross strips for facing the sleeves will come out of the sides left over.

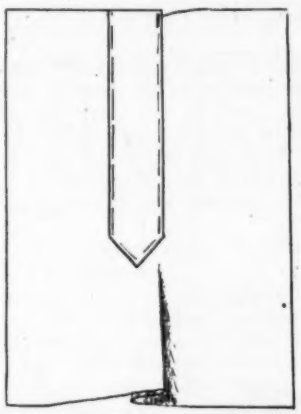
Neckband.—When the garment does not require the full width of the material, as in the small sizes, it is advisable to tear off a strip $1\frac{3}{4}$″ wide from the selvedge for the neckband before cutting out, otherwise there may not be a strip long enough.

It *is* permissible, however, to cut the band for chemises and camisoles from the weft way of the material where economy demands it. The length is a matter of taste, as some mothers prefer the garment to be lower at the neck than others. A fairly general rule is the length of the garment plus $1\frac{1}{2}$″ for turnings and wrap-over. The latter would not need calculating if the garment be closed in front, but the band must then be long enough to allow it to slip over the head easily. The making of both closed and open bands has already been described. A row of feather-stitching may be placed in the middle of the band or one at each edge. Both rows should be worked in the same direction. It is easier to work the feather-stitching before the band is set on to the garment than after, but care must be taken to leave the lower edges open.

To make up the Chemise.—Join the sides by a run-and-fell seam; a seam-and-fell or a counter-hem if it is to be machined. Both fells should face the same way. To secure this, begin to fix from the hem for one side, and from the sleeve for the other.

Make a $1\frac{3}{4}$″ hem at the bottom, taking care to see that the hem seam meets the side seam exactly.

Sew a $\frac{3}{4}$″ crossway false hem on the right side of the sleeve, and hem it down on the wrong. The join should occur on the under-arm seam. The cross strips may be



Front Opening of Chemise ready for Feather-stitching.

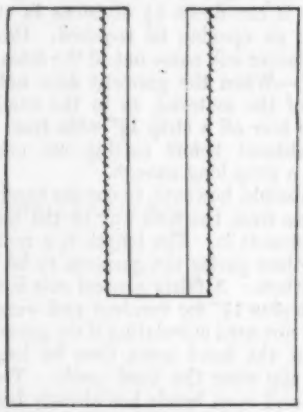
got from the spare material that comes from the under-arm curves. Work one or two rows of feather-stitching to match the neckband.

To make the Front Opening.—There are two ways of making the front opening on a chemise.

1. This, the simplest, takes the form of an inch-wide

hem on the right-hand side and a half-inch one on the left.

2. Turn the garment wrong side out, and cut a 5″ slit ½″ to the left of the middle of the garment, to allow the width of the hem to be taken off. Make a ¼″ nick at the bottom of the *left* of the opening. Fix a ½″ hem, and keep it straight from top to bottom. Hem it.

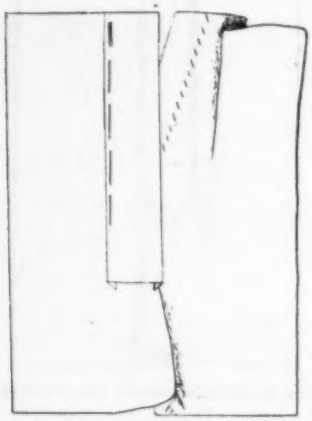


VENT HEMMED.

When a *false* hem is used, the nick is only deep enough to allow for the first turning; but a longer one is needed on the opposite side to allow the boxpleat to fold over.

The right side is to have a strip laid on to simulate a box pleat. The width should be 1¾″. Place the strip with its right side to the wrong side of the garment. Tack it the length of the slit, about ¼″ from the edge, leaving 1″ below the opening. Run and backstitch the two together. Take out the tackings, and turn the false hem over to the right side, allowing the fold to project a little beyond the garment. Turn the garment right side out. Turn in the raw edge of the opposite side of the fold. Tack this fold down evenly and smoothly.

The bottom is turned under and left either square or pointed. The fullness caused by the overlapping of the fold is arranged in the form of a pleat.



STRIP FOR CHEMISE TACKED ON THE RIGHT SIDE, BUT BOTTOM NOT TURNED IN.

The box pleat is secured and ornamented by means of either stitching or feather-stitching on the right side, and on the wrong side by a straight tape.

This method is also used for nightdresses.

The Top of the Chemise.—If closed in front, the band-join should come on the shoulder. The exact half will come on the opposite shoulder, and the middle between these two points. Both back and front will come respectively to the middle of the front and back of the chemise.

Pin the band in those places. As the front of the garment is lower than the back, allowance must be made for this, or the band will not fit properly. Move each of the *shoulder* pins ¾″ farther back, and pin the band to the shoulder at that point.

Half and quarter the straight part of both front and back, but do not gather any part of the shoulder curves.

If the band is open, leave ½″ plain on each side of the front piece.

Gather about ¼″ from the top of the chemise. Stroke carefully, and pin the four quarters of the band to the corresponding parts of the garment.

If the front be open, be careful to fit the edges of the vent *exactly* to the ends of the neckband. *Ease* the shoulder curve, but hold the band firmly. Hem the band down on the right side. Tack it on the wrong side and hem, making the stitches at back come exactly over the front stitches.

Make a horizontal buttonhole in the middle of the band about ¾″ from the end. If a round and square end be made, the round end should come next to the end of the band. Sew on a button.

A CHILD'S KIMONO NIGHTDRESS.

(Four to six years of age.)

2½ yards material 42″ wide.
2 yards narrow Valenciennes lace.
1½ yards insertion or beading.
2 yards ribbon.

This simple nightdress has several advantages over the pattern more generally used. It is very quickly made and as easily ironed, as there are no gathers. The ribbon which draws up the neck is the only fastening, so that the garment can be slipped over the head very readily. For that reason the child who wears it is less likely to catch cold on the chest, as there are no buttons to come undone when tossing about in bed.

The model was a very dainty one for summer wear, of madapolam; but there is no reason why stronger material, and even flannel, should not be employed.

When 42″ material is used, there are only the side seams to be joined.

If a narrower fabric be selected, a join would be needed up the middle of both back and front. Provided the selvedges be firm and even, the two widths could be joined by seaming only.

To make the Pattern.—Take a square of paper 42″ by 42″.

Double it in two to form an oblong 42″ by 21″.

Mark the corners A, B, C, D.

From A mark E ¼ down.

From A mark F 2½ in.

Draw the neck curve from E to F.

From B mark G 1⅜ down and ¼ in.

Draw a curved line from B to G, keeping by the outside line for almost all the first division.

From B mark H 2 down and 1½ in.

From B mark I 4 down and 1 in.

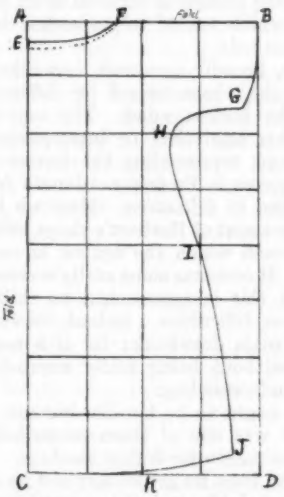
From D mark J ¼ up and ½ in.

Draw a curved line from G to J, passing through H and I.

From C mark K 2 in.

Draw a curve from J to K.

To cut the Pattern out in Material.—The front and back are alike except at the neck, where the front is cut a



4 to 6 years. Square 42″ × 42″. Doubled to 42″ × 21″.

little lower than the back. The dotted curve shows how much deeper than the back the front neck should be.

Double the material in two, having the fold at the top and the raw edges at the bottom.

Open the pattern out and lay the shoulders to the fold of material. It will be found that the material

is rather longer than the pattern. It may be either cut off or allowed as extra length.

Pin the pattern firmly to the material before cutting it.

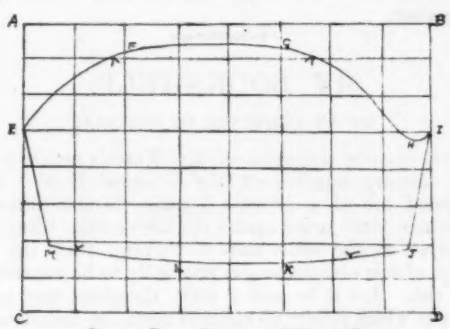
To make the Garment.—Join the sides by the method best suited to the material, whether that be stitched seams, run-and-fell, or seam-and-fell.

Commence fixing the right-hand seam at the bottom and the left-hand one at the sleeve. Begin *tacking* both at the bottom, so that any little inequality in the seams can be shaped off at the bottom of the sleeves.

Make a 1½″ or 2″ hem at the bottom.

To finish off the Neck and Sleeves.—Work of this kind is often spoilt by the use of too coarse cotton and a needle that is thick and clumsy. A No. 6 needle and No. 70 cotton are quite coarse enough. Small, neat, dainty stitches cannot be produced with thick needle and thread.

The top of the garment was finished in a way that is very generally adopted in the treatment of thin, fine materials. It is almost universally used by Frenchwomen for fine underwear. *Beading* with holes through which ribbon can be threaded was used. It is a fine muslin insertion, with plain material on each side of the embroidery, having raw edges. It is very commonly applied between insertion and garments or lace, and can be bought from three-halfpence per yard. The length required to slip over the head easily is cut off and neatly joined by a narrow counter-hem. The upper edge is rolled and whipped, and narrow lace *eased* on to it and seamed neatly. As this seaming is to secure a flat, neat join, the stitches should be taken near the edge, and not placed too close together. When joining the cotton, be sure to leave both ends *lying along the top of the work*



Short Puff Sleeve—12″ × 18″.

in the directions in which the sewing is being done. If they are tucked in—as is usual in seaming—they will hang loosely *on the right side*. A thread will be found at the edge of the lace by means of which it can be drawn up. Being part of the lace itself, it is neater than an inserted gathering thread, as well as less clumsy. The join in both insertion and lace should come on the shoulder.

Roll and whip the lower edge of the insertion, ready for setting on to the garment.

Half and quarter the top of the nightdress.

Roll and whip the latter as finely as possible, placing the stitches as close together as will allow of the cotton being drawn up. Each division should be whipped separately. Half and quarter the beading, and pin it to the garment in those places. Draw up the gathering thread to fit the insertion, and fasten it round the pins. Seam the two together on the wrong side.

A ribbon is threaded through the beading to draw it up to the neck. The bottom of the sleeves is finished off in the same way. The joins in the insertion and lace should come *under* the arm.

If rolling and whipping the garment be objected to

as not being strong enough, a *narrow* hem can be laid and a gathering thread run through it. It can then be seamed firmly to the beading.

Rolling and whipping the Raw Edges of Thin Materials for such things as Pinafores, Camisoles, etc.—Roll the edges tightly and carefully. Hold the wrong side of the material towards the worker, and with the thumb and finger of the left hand turn the raw edge into a small roll—only a tiny one, just sufficient to enclose the raw edge—working from back to front. Place any trimming, lace edging, insertion, or beading to the *right* side, with the edges parallel to the roll. Insert the needle from the back, in a slanting position, just *under* the roll, and through both lace and material. It must not catch the roll, or the whipping will not draw up.

(*To be continued.*)

ANSWER TO CORRESPONDENT.

INTERMEDIATE SCHOOL.—You are quite right: the paper for "trunk drawers" should have been 24″ by 18″, *not* 22″ by 18″; the front band 11″ by 4″; and the back band 12″ by 4″. The words front and back have evidently got transposed. The back band is always 1″ longer than the front one.

It is gratifying to read your high commendation of *Common-sense Needlework*. The need you express for "a book for cutting out on the same lines" will be met in the course of a few months. You might write to Messrs. E. J. Arnold and Sons, Limited, Leeds, about the matter.

MY BOOKSHELF.

BY AN INSPECTOR OF SCHOOLS.

THE opening sentences of Mr. Winch's article in the January number of the *Practical Teacher* have reminded me of a promise I made to the Editor to contribute some notes under the above title. But they conveyed at the same time a warning that the discharge of this obligation was not likely to be unattended with risk. Let it be said at once, therefore, that in the remarks which follow no claim is made for completeness of scope nor for perfection of judgment. They represent merely the views and feelings of an earnest craftsman, which may be of interest to those who are younger in years or in experience than himself; and the books which are mentioned are a selection of those which I have found useful and stimulating in their treatment of educational problems. If they have been superseded by more recent publications, or if they breathe the spirit of heresy, then it is open to Mr. Winch or any competent critic to preach a more modern and a truer gospel.

In dealing first with books on psychology I am treading the most dangerous ground. For several reasons the subject is not popular in this country. The earlier writers were not teachers, yet they regarded education as a collection of purely psychological problems; and some of them—Sully, for example—were so intensely analytical that few teachers were able from a perusal of their books to build up a consistent theory of educational practice. The training colleges, again, were much to blame for the divorce of scientific theory from practice. The lecturer on psychology was frequently a young man whose academic distinction was inversely proportional to his practical knowledge; the master of method or head of the practising school was a practitioner pure and simple. The psychological lecture on Monday morning was separated from the Friday afternoon's practice as widely as the poles. And added to all this was the persistent survival of an obsolete faculty psychology which tended to perpetuate false ideals and erroneous methods.

There are, broadly speaking, two schools of psychological thought, characterised by different methods of regarding the human mind. The one is synthetical, and the other analytical or introspective. The most delightful book representing the former school I have ever come across is Professor Adams's *Herbartian Psychology applied to Education*. Here we have an admirably clear account of Herbart's views, enlivened by that humorous touch which the author knows so well how to employ. It contains some really serious philosophical writing, but this is approached so skilfully that one hardly notices difficulties. Indeed, its very lightness of touch is its main drawback; for if a teacher can read through it without being really amused, he can read it without understanding.

The book ought to be familiar enough, because some years ago it was one of those prescribed for the Certificate Examination for acting teachers.

Quite apart from its genial fun and its readable character, however, I like it for its conception of consciousness as a dome into which the stream of ideas is constantly rising, and more particularly for its treatment of observation. We have been told so often that we are to cultivate observation in our children. They are to heat copper and notice and record the changes which take place; they are to go out into the highways and byways and notice the features of field and hedgerow, of leaf and branch—and all this without recognition of the fact that observation involves a reaction between what is *inside* the mind and what is outside of it. As Adams says, the teacher who seeks to cultivate observation by providing objects for his pupils to gape at does not understand the rudiments of his art; and he speaks scornfully of the country walk with all the five gateways of knowledge open—and the mouth as well.

Among introspective psychologists no one has a more delightful style—crisp, lucid, logical—than the late Professor William James of Harvard. His best-known book is probably his *Talks to Teachers*. It is easy, stimulating, practical, and cheap. But to me it is milk and water compared with the strong meat and drink (please, Mr. Editor, not meat and strong drink) of his *Psychology: Briefer Course*. This book is emphatic on the accompaniment of every psychological process by a physiological change; and though there may be some who do not regard James's position as established, the mutual sympathetic reaction between mind and body is particularly illuminating. But above all things, I think this book serves as a corrective to the somewhat mechanical conception of the human mind developed by Herbart. This may be purely a personal view; but I have found that the Herbartian method affords the easiest approach to the study of mental problems. If, however, it is pushed too far it becomes artificial, while the introspective method helps to give a living picture more nearly in accordance with experience.

I do not know whether this position will be more effectively defended by pointing out that educational problems are rarely purely psychological. To know psychology no more makes a man a teacher or educa-

tional organiser than mathematics makes a man an engineer or physiology a doctor. Education is an applied science into which some psychology enters, but only that psychology is effective which is weaved into the fabric of practice. The study of psychology is rarely effective immediately; it has to be meditated on in association with classroom experience and applied to classroom problems. The study of mathematics *quâ* mathematics does not immediately help to design a machine; it has to be applied to problems in which other factors are properties of materials, workshop processes, and workshop economy. In the days of the pupil-teacher system it was often said that a man fresh from college was less effective than he had been before he entered. Formerly he was a ready practitioner; latterly he was a theorist who had lost his practical efficiency, and whose theories—only half understood—had not had time to be incorporated with the little practice that remained.

Before leaving this type of book I should like to say a word in favour of Lloyd Morgan's *Psychology for Teachers*. If for no other reason, it deserves a word of praise for the admirable, sane, and temperate chapter on "Character and Conduct."

Some books of a totally different kind have appeared during the past ten years. These owe their origin to the growing opinion that education is a science in itself—that while it draws upon psychology largely when viewed from one aspect, when viewed from others it draws with equal freedom upon physiology and sociology.

The first of these books which came under my notice was *Education as Adjustment*, by M. V. O'Shea, Professor of Education in the University of Wisconsin. The book appeared in 1902, and contains a lucid and temperate discussion of the wider problems of education as distinct from those which arise in and are associated with the classroom. The child is considered as a growing organism, endowed with certain mental characteristics, and needing to be trained to harmonious reaction with the physical and social world in which he lives.

More recently (1903) the same writer has published *Dynamic Factors in Education*, in which he lays a solid foundation for the doctrine of learning by doing. In no other book, probably, has the true importance of utilising the motor activities of children been so thoroughly discussed and so completely established. An interesting feature is to be found in the questions which follow certain chapters. These are either addressed to the readers' experience, or they suggest certain observations for him to undertake. In both cases the results will be found to lead to the generalisations contained in the preceding chapter.

Before leaving books dealing with the more general problems of education, it may be as well to mention Professor Welton's *Logical Bases of Education*. This is extremely interesting, particularly in its treatment of the nature of knowledge; and teachers who have to deal with older children would find it an admirable help to the correction of the slipshod reasoning to which their pupils are so prone.

An eminently readable book is Professor Raymont's *Principles of Education*. It covers an enormous amount of ground, and suffers in places from excessive concentration. But the style is good, and the scope is defined with judgment.

(To be continued.)

PRACTICAL NOTES ON SCHOOL GARDENING FOR MARCH.

BY BRUCE COOK, F.R.H.S., CHINGFORD.

MARCH is perhaps the busiest month of the year with gardeners, young and old, and is *the* month for seed-sowing.

Take advantage of fine dry days, when the surface soil is "dust dry," for sowing seeds and planting generally. It is really wonderful the effect that a day's "March wind" has on the soil.

Fruit Culture.

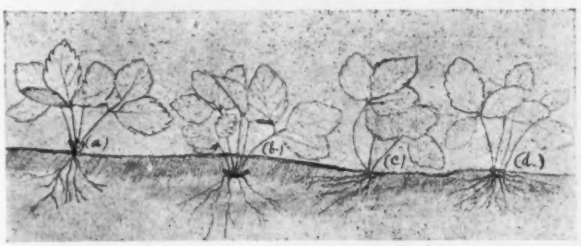
Strawberries can be planted this month in well-dug and richly-manured soil. If the plants can be obtained with plenty of soil round the roots, they may possibly bear a few berries this year. We planted a few in each plot late in March last year, and picked a good many in July. But there can be no doubt, if the ground is ready and the runners are well rooted, that the best time for planting is late August, when with attention a good crop can be picked the following season. Some, however, prepare the soil thoroughly in the autumn, and follow the practice of planting in March.

Successful strawberry-growing depends greatly on the runners being planted in the proper method, and many failures are due to careless planting.

They should be planted in rows, two feet between the rows, and one foot from plant to plant in the rows.

Always use a trowel for making the hole when planting, and spread the roots out nicely; then place the soil over the roots, treading the soil firmly over the roots. Never plant when the soil is very sticky.

The following diagram shows the right and wrong methods of planting strawberries.



Right and Wrong Way of Planting Strawberries.

In diagram (*a*) the plant is not put in sufficiently deep, while at (*b*) it is planted too deeply. This is a very common error, and is the cause of so many plants dying. At (*c*) the roots are just rammed into a hole, and never grow well. The right way of planting is seen at (*d*), where the crown of the plant is just on the ground-level and the roots spread out in a proper manner.

Grafting might be done late this month or early in next, according to the season. We hope to go into this next month. In the meantime have the following "grafting wax" made up ready for the work, as it is better, perhaps, than using clay. Obtain resin four parts, beeswax two parts, and common tallow one part. Melt these together, and pour when hot into tobacco or other tins with lids.

Pruning of all Fruit Trees.—Currant and gooseberry bushes should be finished by the end of March.

A great point to be aimed at is to produce a well-balanced tree or bush, not crowded in the centre with young, useless wood. Allow plenty of space, especially between the branches of apples and pears.

Do not cut back plums and cherries too severely, as they are liable to "gum."

If you wish the branch to spread outwards, prune close back to a bud pointing outwards.

Cut back young growths on red currants, but leave young growths on black currants.

If summer pruning has been well done, there will be little of the cutting back of this year's growth in the winter. Although, as we have stated before, we do not recommend the planting of standard trees in small gardens, still the lads should be taught how to prune such trees. The pruning of standards is best done with a "long pruner," as shown in the photo. Such a pruner can be purchased for five or six shillings, and with care will last

a lifetime. It only weighs a few pounds, and a big boy can manage it. Fortunately, I have a few standard trees in my own garden, and the lads are taught how to prune these. These pruners can be obtained direct from Gamage of Holborn, who will, I believe, pay carriage.

Pruning Standard Tree with "Long Pruner."

Raspberries may be planted this month in rich, heavily-manured soil. After planting, cut the canes back to within six inches of the ground. Do not allow any to fruit for the first year. After planting, mulch with well-decayed manure. Never dig between raspberries, as the roots are formed near the surface of the soil. Keep the weeds down by frequent hoeing and plentifully mulch.

Vegetable Culture.

Most of the work in the vegetable section can be carried out as recommended in the *Practical Teacher* of last April, but do not attempt to get on the land too much if it is very wet in March; better delay the work until April.

Potatoes (early varieties) should be planted. If they have been sprouted on damp moss in boxes, you should rub off with the finger all the sprouts excepting, say, three. If the ground was manured and ridged in the late autumn, it will be ready for planting any fine dry day in March; only defer the operation until the soil on the surface is dry. You might lightly scatter a little soot or Clay's manure along the bottoms between the ridges, and carefully plant the sets "eyes" upward along the bottom of the ridges, at a distance of from twelve to eighteen inches apart from set to set. Then rake the tops of the ridges over the sets, and level the surface nicely. The soil having been exposed to the frost during the past winter, will be found to be in a light, sweet, easily-worked condition.

If you have not sprouted the sets as advised, as soon as you obtain your seed potatoes let the lads stand round while you give them a practical lesson on seed potatoes. If the "sets" are large, explain how to cut the seed (see diagram) into pieces containing one or two eyes. Note that you cut downwards from the "eye end" to the "blind end" of the seed potato. When cut in this manner, it is a good plan to just dust the cut ends with wood ashes, lime, or soot, otherwise the slugs may attack them.

Should the soil be a very light one, the "sets" may be put into a hole made by a "dibber," in rows about two feet apart and eighteen inches between the sets, and four or five inches deep. Only (and this is important) do not drop the seed potato anyhow into the hole, but drop it in "eye end" up, as the crop planted in this manner was ready two weeks or so earlier with us last year than a row planted with the "eye end" downwards. This is a point often overlooked.

The lads are having a lesson on this in the picture before proceeding to plant the sets.

Jerusalem artichokes make a good screen if planted somewhat close together. We generally dig a trench out about one foot in depth and two feet in width, similar to a celery trench. It is a good plan to dig this out early in the winter. Two or three inches of well-rotted manure is spread over the bottom of the trench, and this is covered with three inches of somewhat fine soil. On this the tubers are placed, about four inches apart. This is rather close, we admit. The trench is then filled up to within an inch or so of the top. In very dry weather give a good soaking of water. They want very little other attention until they are ready for digging in the autumn, when the tubers make a really nourishing dish. Always aim at growing large tubers, for small ones do not pay for growing, as there is so much waste when peeling. There are two varieties of the Jerusalem artichoke—the white and the purple. The former is of more recent introduction, and is certainly the better. We know that many grow them in any out-of-the-way corner in poor, worn-out soil; but, properly grown, the Jerusalem artichoke is one of the best-paying crops (in addition to forming such a good screen) in the garden. The stems, which often attain a height of nine feet, also come in handy for lighting the fire when dry.

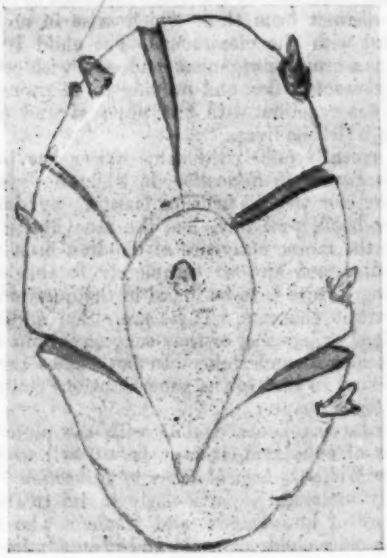
Flower Culture.

An "annual" plant is one which grows from a seed which is sown, germinates, grows, flowers, produces seed, and dies all in one year.

Annuals, as they are called, are divided into two classes—(1) *hardy annuals*, and (2) *half-hardy annuals*.

Hardy annuals may be sown in the open in good, rich, fine soil, and after thinning can be allowed to grow where sown, as they are perfectly hardy. They may be sown in drills or clumps.

Half-hardy annuals, if required for early bloom, should be sown in pots or boxes in a warm window-frame or in a greenhouse. When in their second leaf, before they get too drawn, they should be pricked out into boxes, about three inches apart.



Large Seed Potato.

(Showing the method of cutting it into pieces for planting.)

The following is a short list of annuals easily grown.

Note.—The letters "h.a." in brackets denote "hardy annual," and the letters "h.h.a." denote "half-hardy annual."

Aster (h.h.a.) seeds should be sown in boxes early in March. The boxes can be in a light, sunny window-sill inside the schoolroom. Do not sow the seeds too thickly, as they are liable to

damp off. Cover lightly with fine soil. Transplant, when large enough, into other boxes, ready for planting out in May. They should be planted about a foot apart. They can, later on, be potted up into good soil and grown on the window-sills, as they only grow about a foot in height.

Candytuft (h.a.).—Very hardy, and should be grown in lines. Sow the seed in drills, say half an inch deep, and cover with fine soil. Thin to about nine inches apart. Or may be grown in clumps. Grows about a foot in height. The crimson and white look very nice mixed.

Coreopsis (h.a.) grows to a height of two feet, and comes in splendidly for cutting for decoration of vases. Sow the seed in well-prepared soil, in drills or clumps. Never crowd the plants, but thin them to at least one foot between plants. The crimson and yellow flowers, perhaps, are the best.

Convolvulus (h.h.a.).—Two varieties—namely, major and minor. The former grows to a height of nine or ten feet, and is useful for training over fences, etc. The minor variety only reaches about a foot in height, and does well in masses. Both may be sown in the open in April or May. Sow the seeds one inch deep, and thin to ten inches apart.

Cornflower (h.a.).—Sow in light, well-manured, and well-drained soil. Sow the seeds in March where they are to bloom, for cornflowers do not transplant easily. They reach a height of between two and three feet. Thin to fifteen inches from plant to plant.

Godetia (h.a.) should be sown in good soil in March in patches, and covered lightly with fine soil. With care they will bloom till autumn, and the flowers last well when cut and placed in vases. They grow about a foot in height, and should be thinned well, allowing a space of a foot from plant to plant.

Helichrysum, or *everlasting flowers* (h.h.a.), have a wide range of colours, and are most useful for keeping in a dry state in vases during the dull winter months. The seeds can be sown as recommended for asters, or may be sown in the open in April in fine soil and transplanted to nine inches apart. In good soil they grow to a height of between two and a half to three feet.

Mignonette (h.a.) does well if there is lime in the soil. Seed may be sown in March to end of April, or even early May. Sow in lines or clumps, and cover lightly with soil. Remember to thin well if large spikes of flowers are wanted—never less than one foot from plant to plant.

Nasturtium (h.a.).—The tall varieties often attain a height of nine feet or more. The dwarf (or Tom Thumb) kinds are grand for massing, and seldom exceed a height of twelve inches. They are not particular as to rich soil, as long as it is well dug. Both kinds may be sown from March to May, about half an inch deep, and thinned to at least a foot apart. The flowers come in for the painting lesson, and the seeds, if picked when young, make excellent pickles.

Sweet Pea (h.a.).—Perhaps no flower has become more generally grown during the last ten years than the sweet pea, and numbers of books and articles have been written explaining how to grow show blooms. We had the exhibiting fever for four years, and were successful. In the first place, obtain good seed from a reliable firm. Obtain the seeds in separate varieties, and do not, as a rule, purchase packets of mixed seed. They are very hardy, and may be sown in the open, in trenches specially prepared, from February to April. Of course, you can grow the seed in pots in a cold frame and transplant in May. Plant or sow in rich soil, and grow each plant at least four inches apart. They require careful sticking. Never permit any seed-pods to form, and keep the blooms well picked, as this extends the blooming period. About the middle of July dust some Clay's round the stems, and water this in. Do this two or three times at the interval of a week, and note results.

Shirley poppy seed should be grown, as the flowers come in excellent for the painting lesson. Care should be taken in sowing, as the seeds are so small. They may be grown in lines or in groups. This poppy was raised by the Rev. W. Wilks, the secretary of the Royal Horticultural Society. The seed should be sown in March where the plants are to bloom, as they do not transplant easily. Thin to about eight inches apart.

Stock, Tenweek or German (h.h.a.).—Sow as recommended for asters. If raised in boxes do not water too much, especially when in the first leaf, as they easily "damp off." Another point to remember is that you must obtain good seed if you are to expect double flowers. A peculiar fact is that the small plants, when young, often produce double flowers.

Sunflower (h.a.).—There are the giant variety and the dwarf. They may be raised in the way recommended for convolvulus.

Tropæolum Canariense, or *Canary creeper* (h.h.a.), is one of the best annuals for covering trellis, old stumps, or arches. Easily grown, either in pots or boxes, and then transplanted, or sown where it is to bloom. Seed can be easily saved from year to year. If grown in rich, deep soil and kept well watered, it will grow to a height of twelve feet.

A "biennial" is a plant that lives for two years—that is, it is produced from seed, grows, flowers, and seeds during the two years, and then dies. It mostly flowers and seeds during the second year of its existence.

The following is a list of biennials most commonly grown, suitable for a school garden.

Canterbury Bells.—Sow the seed in fine soil in boxes, or in the seed-demonstration bed, in May or June. Keep well watered and weeded, and transplant into rows in a bed in September, or into the position where they are to flower.

Indian Pink.—Sow seed lightly in June in the open, in drills about nine inches apart, in fine soil, and just sprinkle some fine soil over the seed. Water through fine rose, and transplant the young plants, ready for finally putting into their position in August for blooming next year. They do well in a sunny position.

Sweet William.—Very hardy, and an old favourite. Sow in light soil in drills about a quarter-inch in depth, in the open, in July, and transplant into their flowering positions when large enough, or into nursery-beds until such is ready.

Wallflower seed may be sown in May or June in well-prepared soil in an open, sunny position, in drills about one foot apart and a quarter-inch in depth. When the plants are two inches high transplant to about six inches apart, and then carefully lift and plant into their flowering position when the ground is ready. A good supply of these useful plants should be grown, as they come in splendidly in spring.

A Practical Lesson on "Potato Sets" before Planting.

A "perennial" is a plant which generally, in suitable soil and with proper attention, continues to grow and produce flowers and seeds year after year for a number of years. Many of them require lifting, dividing, and replanting in freshly-enriched soil every three or four years.

The following perennials are easily grown in a school garden, and their blooms can be recommended for copying in the brush-work lesson.

Antirrhinum—or *snapdragon*, as it is sometimes called—can be sown in a frame in March for flowering the following July, or may be sown in July or August for flowering the following spring. Should be planted at least one foot apart in rich soil; open position. There are three classes—tall, medium, and dwarf—and vary in height from two feet to six inches.

Carnation can be raised by sowing good seed from a reliable firm in July or August. Sow in boxes or pots containing fine, light soil. When large enough, plant out into prepared beds, say at a distance of eighteen inches from plant to plant. The soil in the beds should be rich, containing plenty of leaf-mould and sifted mortar rubbish. Layers can also be made in July, and the rooted layers can be planted in the border or beds. Only see that the soil is prepared, if you wish to produce fine blooms.

Columbine—or *aquilegia*, as it is sometimes called. Easily raised from seed, which may be sown in the open, in June, about a quarter-inch deep in drills and covered with fine soil. Planted out where to bloom in late autumn they will produce fine flowers the following season. If sown early in March in boxes, and placed in a sunny window, they may be pricked in June and bloom the same season. Grow the spurred varieties. They grow to a height of about eighteen inches.

Foxglove or Digitalis.—Very showy and hardy, growing three to five feet in height. Many coloured varieties, especially yellow and white, can now be raised. Seed may be sown in May or June and transplanted when ready. They seem to do best in a shady spot, and require rich, deep soil.

Delphinium will grow to a height of five or six feet. Easily raised from seed or by division of old clumps. Seed may be sown in the open in June and transplanted when large enough. They delight in a deep, rich soil. The growing points need protection from slugs in early spring. Spread plenty of soot and ashes round the plants occasionally in spring. This will keep them from attacks of slugs, which are wonderfully fond of the young growths.

Hollyhock grows to a height of six feet and over. Seed may be sown in the open in June, in drills an inch deep. Do not sow the seeds too thickly, and cover them with fine soil. They do best on well-drained, light, but well-manured soil. As they grow they require staking. The double varieties are very handsome, but somewhat delicate and liable to disease.

Forget-me-not.—A well-known spring flowering plant. Seed can be sown in June or earlier, and very lightly covered with fine soil in somewhat shady spot. In fact, they seem to grow much better in a shady position. To obtain good flowering plants always thin well, and allow nine inches from plant to plant. Its pretty blue star-shaped flowers are produced freely if the plant is well grown.

"Busy at Work," taking advantage of a fine March day.

Pansy plants are easily raised either from seeds or cuttings, and are one of the most popular flowers grown. If grown from seed, obtain the seed from a reliable grower. These can be sown in frames early in spring, and with care will bloom the same season. But perhaps the best plan is to sow them in well-prepared soil in July, when they will be ready to transplant in the late autumn. They make a good border, as they grow to about four or five inches in height. By keeping the blooms frequently picked you greatly extend the flowering season. They should be planted in rich soil about a foot apart. Should green-fly appear, syringe at once with a solution of soft soap and water, putting three or four ounces of soft soap to a gallon of water. Cuttings of any choice variety can be made in sandy soil in boxes or frames in September or October.

Pentstemon may be raised from seed, but the better plan by far is to make cuttings in September and keep them in a cold frame until planting-out time in spring. They grow to a height of about two feet, and are grand for cutting.

Polyanthus and Primrose.—Both are easily grown from seed, and the varieties of colour obtained from good seed are remarkable. Seed may be sown in June. It is a good plan to sow the seed in boxes, or in specially-prepared soil in the open. Keep the seedlings free from slugs by frequent dustings of soot or lime. Fancy primrose seed produces flowers of a wide range of colour, from white to a deep red. Select, if possible, a shady spot for their permanent quarters, and early in the season mulch with leaf-mould after applying some artificial manure.

Violas are becoming more popular year by year. They are sometimes called "tufted pansies," and are excellent for bedding or borders. The foliage is somewhat similar to that of pansies, as are the blooms; only whereas the pansy blooms are blotched, as it were, with colour, the viola is rayed or a self. Again, violas—at any rate, many of the varieties—are strongly scented. They may be raised from seed or cuttings, similar to pansies.

Violas should be looked over, if in frames or boxes, early in the month. A little soot or Clay's lightly dusted between the rooted cuttings will brighten them up before planting them out towards the end of the month. They delight in a cool, deep soil, well enriched, if specimen blooms are wanted. By keeping the flowers closely picked violas will bloom freely until late autumn. They do well in beds or borders.

Pansies may be treated in a similar manner as recommended for violas. Any rooted cuttings or seedlings should be lifted with a trowel and carefully planted into position. Water well, and shade for a day or so from the wind and sun. Old clumps that have been left out during the winter should be looked over, and long worn-out pieces should be cut away with a pair of scissors. Dust some Clay's or soot close up round the roots. Remember never to let any chemical or artificial manure touch the leaves or roots when applying it, and also that light, frequent doses should be the rule.

Pinks and carnations, if not planted in the autumn, should be put out at once. The latter do best if grown in fairly rich soil, into which plenty of road-grit and old sifted mortar have been dug. Pinks may be planted closer together than carnations, which should be grown about eighteen inches apart.

Pruning roses, especially hybrid perpetuals, should begin towards the end of this month or the beginning of April, while teas and noisettes should never be pruned until late in April. Climbing roses require little pruning, as a rule. Encourage the long, young growths, and cut away thin, worn-out stems.

Answers to Correspondents.

Miss E., Little John, and J. M.—Your committee will no doubt incur the expense of thoroughly digging the land. Try them.

Lintel.—I would not recommend such a course without consulting the managers and H.M.I.

Ajax and Leek.—You will find that too much will not—in fact, cannot—be expected the first season.

John M.—The arrangements differ in various countries. Some sell the produce to the lads and provide the seed, others give the produce as a reward to the scholars in the class. Try Dobbie and Co. of Edinburgh; they are reliable seedsmen.

C. W. and Beginner.—Thanks for remarks.

Assistant.—No, not at present. But why not try? You say these notes are helpful; and although you have not had experience, you will soon pick up the work.

Magister, L. K., and Miss Mac.—The Royal Horticultural Society of Vincent Square, London, S.W., will hold the examination for school teachers on Wednesday, April 26, 1911. Write to the secretary for full particulars. You need not come to London to take the examination.

Man of Kent.—Write to Gamage's, Holborn, who will supply you.

Mrs. C.—I propose dealing with the subject fully later on.

Yorks and Leek.—Refer to the Code.

S. K.—Personally I do not believe in a local group of schools competing for prizes for crops grown in their gardens. Growing for show is quite a different thing from growing for general use.

Other correspondents will be attended to next month or by letter.

Book Notes.—In response to several inquiries, the Editor has pleasure in stating that Messrs. Longmans' *Manual of Drawing*, noticed in our last issue, is the work of W. W. Rawson, A.R.C.A., of the Department of Public Education, Cape of Good Hope. The volume is provided with a large number of illustrations, including four coloured plates, and is published at two shillings and sixpence.

Messrs. James Nisbet & Co., Ltd., have pleasure in announcing the publication, early in March, of a book by one of our own contributors, Miss Johnson, of Sompting School, Sussex, on *The Dramatic Method of Teaching*. Miss Johnson's name and work are well known to every one interested in education. The book will have a preface by Mr. E. G. A. Holmes, the late Chief Inspector of Schools in England.

French Prize Competition.

1. All French translations **must be received not later than March 7, 1911**, and addressed to:—PRIZE EDITOR, Office of *The Practical Teacher*, 35 and 36 Paternoster Row, London, E.C.
2. Competitors should cut out and send the *coupon* which appears on the Back Wrapper page of the current number. One coupon must be sent for each entry.
3. Competitors should write pseudonym only on MS. Prize-winner will be asked to send name and address for publication.
4. No competitor may take the prize offered more than once in three months.

A Prize of **Half a Guinea** is offered for the best rendering into English of the following extract:—

Elle se sentait à l'aise avec les gens d'armes. Quant aux docteurs, elle ne pouvait les souffrir, et c'était pour elle un supplice lorsqu'ils venaient arguer. Bien que ces théologiens usassent de grands ménagements à son endroit, leurs éternelles interrogations lassaient sa patience; leur lenteur, leur pesanteur l'exaspérait. Elle leur savait très mauvais gré de ne pas croire en elle tout de suite, sans preuves, et de lui demander un signe qu'elle ne pouvait leur donner, puisque ni monseigneur saint Michel, ni madame sainte Cathérine, ni madame sainte Marguerite, pendant les examens, n'apparaissait. Dans le retrait, dans l'oratoire et dans la campagne déserte, les hôtes du Paradis la visitaient en foule; anges et saintes, descendus du ciel, se pressaient autour d'elle. Mais, à la venue des docteurs, l'échelle de Jacob se retirait soudain. Et puis ils étaient des théologiens et elle était une sainte. Les rapports sont toujours difficiles entre les chefs de l'Eglise militante et les dévotes femmes qui communiquent directement avec l'Eglise triomphante. Elle sentait que les révélations dont elle était favorisée abondamment donnaient des doutes, des soupçons, des défiances même à ses examinateurs les plus favorables. Elle n'osait pas trop leur conter les secrets de ses Voix, et elle confiait, derrière leur dos, à son beau duc d'Alençon qu'elle savait et qu'elle pouvait beaucoup plus qu'elle n'avait dit à tous ces clercs. Ce n'était pas à ceux-là qu'elle avait été envoyée; ce n'était pas pour ceux-là qu'elle était venue. Elle se trouvait gênée avec eux, et leurs façons d'être lui inspiraient cette mauvaise humeur empreinte dans plus d'une de ses réponses. Parfois, quand ils l'interrogaient, elle se rencognait avec mutinerie au bout du banc et faisait la moue. "Nous sommes envoyés vers vous de la part du roi," dit maître Pierre de Versailles. Elle répondit de très mauvaise grâce: "Je crois bien voir que vous êtes encore envoyés pour m'interroger. Je ne sais ni A ni B." Mais à cette demande: "Pourquoi donc venez-vous?" elle répliqua vivement, "Je viens de la part du Roi des cieux pour faire lever le siège d'Orléans et conduire le roi à Reims, pour son couronnement et son sacre."

From "Vie de Jeanne d'Arc," by ANATOLE FRANCE.

RESULT OF THE FEBRUARY COMPETITION.

The prize is awarded to "Acanthus." (Will "Acanthus" kindly forward name and address for publication?)

First Class.—Sirrah, Dalesman, Verloren, Sapphire, Quixote, Jella, Kettering, Toul, Elsie (A), Gem, Elsie (B), Augustine, Haarfaager, Crocus, Jan, Bounassis, Saxivicus, Mergy, Ostende, Mordref, La Corrèze, Ravenscraig, Adaptive Indolence, R. de C., Rugbeian, Jean, Casaubon, Paul, Eglinton, Clutha, Coppertop, Smadae, Abeille, Dim, Asinus, Ecila, O. T., Petite Larg, François Villon, Curio, Toto, Dot (A), Harriet, W. M. E., Napoléon, Aspirant, Rhonda, L. N. R., Auld Lang Syne, Syra, Aurora, Via trita, Kismet, Bumbler, Oiseau bleu, Nil desperandum, Troisième, Isomorphism, Tartarin de Tarascon, Kinsey, Amateur, Jeannette, Zoe, Nip, Carlo, E. C. M., Castra, Quam dilecta, Ouistreham, Martello, Marguerite, Soldat, Mounières, Ein Mädchen, Hellas, Nichola, Yvonne, Westcotes, Reverence, Asteroidea, Gerard, Southchurch, Arromanches, Postoria, Penelope, Rôdeur, Toulouse, Niquette, Wife of Bath, Em, Kram, Tatters, October, Miranda, Sirius, Sunbeam, Manon, Teabe, Cæsare, Michael, Lochinvar, Lamorick, Don Lyndon, Une anglaise, Normand, Margaret, Gaudeamus, Sheba, The Spider, François, Elena, Hialmar, Pete, Forward, Celia, Beatrice, Estelle.

Second Class.—Roma, Marie, Fairfield, Sadrismi, Rose, Lachlanus, Guillaume, M. H. H., Dot (B), Iscar, Poppy, L'hirondelle, Jago, Willy, Snowdrop, Essex, Quentin, Lester, Fosman, Smifkins, Mincarlos, Hamish, Edouard, Lilian Davies, Eustace, Juliet, Ettle, Burtergill, Vincentius, Hyacinth, Mundella.

The name and address of "Paul," who gained the prize last month, are: Mrs. A. E. Robinson, 2 Somerset Villas, Cheltenham.

REPORT.

The outstanding feature this month is the extraordinary increase in the number of competitors—an increase probably due to the fact that the piece set appealed to a large number of our readers. The average merit of the translations is quite above the average. A large number, however, failed to see that *de cette ville* is simply "from this town." They were possessed with the idea that it must mean "of" or "about this town," taking no account of the fact that this meaning could make no sense with *répondre*. A less number, but still many, could not see that *élevée* in *jeunesse élevée* has a predicative use, and we got "elevated youth," "aristocratic youth," etc. In *le parfum des lettres et du beau* several dozen competitors translated *beau* as "beauty," thus giving it either a meaning not intended by the writer, or a narrower meaning than his. "The beautiful" would express what is meant. We are sorry that by an error of my own *assez* crept in instead of *aussi*, but no one was prejudiced by this litt e incorrectness.

PRIZE TRANSLATION.

It is from this beautiful, stately, illustrious, and delightful town of Oxford that I have the pleasure, my dear friend, of replying to your letter of March 4, and of thanking you for the trouble you have taken, with your accustomed kindness, about my letter for Rome. I arrived here yesterday evening alone and altogether forlorn, but with a childish joy at finding a town without smoke and noise, abounding in literary monuments—some of Gothic architecture, others of modern style, and with an incredible number of quadrangles and silent gateways through which pass here and there young students wearing caps and very original little gowns. With pleasurable excitement I walk through these peaceful streets, in these fine avenues of trees which line the banks of two rivers, and I do not remember ever having seen anything which impressed me so favourably.

I imagine that all this flower of manhood educated here never loses the memory of it, and returns to it with an affection that time only increases. We have nothing like it in France. For us the university is a training-school—that is to say, four walls, with five or six professors and as many tutors.

Here the university is a world, and a charming world. The doors of all the colleges stand wide open, and strangers can enter them as a retreat which belongs to all who love the aroma of letters and of the beautiful. Each of these colleges is spacious, but not overcrowded; solitude adds to their grandeur. Almost all, churches and piles of ancient buildings too, bear the stamp of an incredible antiquity; the black columns are furrowed with white marks that time has hollowed in the stone, and it seems as though it might all collapse instantly. It is at once the representation and the stronghold of the Anglican Church. "ACANTHUS."

Is It to be Kill or Cure?

SAVING THE VAN-BOY.

BY JOHN PERKINS.

IT has become the fashion to lament the position of lads of the errand-boy, newspaper-boy, van-boy, and odd-boy type. Well-meaning people throughout the country express the pious opinion that something must be done to prevent boys entering employment of this class. All our boys are to be encouraged to adopt some form of handicraft as a means of livelihood. To seek a situation in an office or shop is *something* of a degradation, but "unskilled" employment is to be *absolutely* taboo. It ends in a "blind-alley," you know, and—well, there's an end.

It is astonishing what a number of estimable folk—even those who are more than ordinarily brilliant—let themselves go upon subjects of which they have no practical knowledge. Only the other day the Prime Minister was bewailing the van-boy, sitting on the tail-board of a cart, reading periodicals of questionable merit. I do not know that he suggested a remedy; but probably the majority of those who read his lamentations mentally determined that the van-boy must go. But do not the youths in our offices and secondary schools and public schools surreptitiously read *Juicy Jottings*, and tales such as *Greedy for Gore?* Yet no one suggests that we should exterminate our junior clerks and secondary and public school boys.

As a matter of fact, we are only just beginning to know anything about the difficulties of the adolescent boy and girl. When we have deduced definite scientific principles, based upon well-founded scientific data, we may be able to talk about the problem with some degree of certainty. In the meantime it is useless to be continually shouting, "Here's something bad! Root the whole thing out!"

I do not stand alone in believing that we shall live many a long day before we displace the class of employment which I instanced at the outset. We can agree that such work is in the main uneducative; that it tends to weaken the moral and intellectual fibre; but, as

WE CANNOT HOPE TO ABOLISH SUCH LABOUR WITH A STROKE OF THE PEN,

it should be apparent that our duty as educators is to make an endeavour to counterbalance the evils by means of social and educational agencies.

It was my good fortune recently to interview the Rev. John Stansfeld, Vicar of St. Anne's, Bermondsey, who was until recently Doctor and Warden of the Oxford Medical Mission in Bermondsey, in which he still maintains a vigorous interest. This mission, carried on mainly by the voluntary efforts of Oxford University men, has under its control five clubs for lads and men. In the course of the year nearly a thousand members are enrolled, and the large majority are lads engaged in various branches of uneducative labour.

The majority are at work at six in the morning, and when night comes do not seem eager to study. From twenty to thirty per cent. join evening classes, but, from various reasons, soon fall off, only about ten per cent. attending with any degree of regularity. Dr. Stansfeld was in no way optimistic concerning the desire or the opportunity these lads have to improve themselves. The few who were regular in attendance at evening classes were usually engaged in the daytime in offices and shops, and work of that class.

He had tried to make attendance at evening classes compulsory in one of the clubs, but the oversight and the difficulties became burdensome, and the rule was relaxed.

He found the lad of the van-boy type very irresponsible and unwilling to learn the ordinary school subjects, but yet eager and vastly interested in religious exercises and instruction. This experience is common with all earnest workers among young people. Their emotions are wonderfully keen, and the religious emotion is easily affected at this age. This leads one to surmise that probably the objection to continue their education after school days is occasioned by the unsuitability of the pabulum. We should seek to discover the needs of the adolescent, as revealed by psychological research, and then endeavour to meet the need.

A large amount of voluntary private tuition is given in connection with the clubs; but this, in the main, appeals only to the boys engaged in commercial pursuits.

The large majority of the boys lack ambition: the future has no incentive for them. After the first year or two they have an abundance of pocket-money, and can easily obtain their inexpensive amusements. When they are too old to continue to take lad's pay, many drop into various forms of casual labour, many enter the army, and some go abroad.

Although these clubs can boast of little purely educational work, upon the moral and religious side much permanent good is being done. Dr. Stansfeld spoke with pardonable pride of many lads who were acting as officers in their churches. One lad—

A HEATHENISH LAD FOR PRANKS—

aged about sixteen, was living a really brave life in his work of bottle-washing. He went to the evening school, but left, not understanding the "gallons long words;" but the devotional religious instruction appealed to him.

"Do you think," asked I, "that van-boys, errand-boys, and bottle-washers can be abolished?" "You *must* have him," was the reply.

"What can we do for him?" "Instruction suited to the various tendencies of the lads must be provided. Every van-boy must attend classes on the care of horses. When the present van-boy becomes a man, he is seldom put in charge of a horse. The carmen are recruited from the country. If a boy were trained, he could adapt himself."

We agreed that we could scarcely expect the lad to be diligent at evening classes unless there was some relaxation in his hours of labour. A voluntary system works unfairly, because the good employer is handicapped by his generosity.

Incidentally I gathered that the boys who desire instruction cannot always get that which they desire. The leather trade is an important factor in this district, and trade classes are held at the local Leather-sellers' Institute; but many of the boys say they can do better in the workshop.

I left Dr. Stansfeld more and more convinced of our

injustice to our growing lads. We fail to understand the natural impulses and necessities of their age; we endeavour to foist upon them instruction suited to babes or to adults; and, as a consequence, we fail to influence them. We may howl for compulsory continuation classes, and compulsory shortening of the hours of labour; but we must be prepared to fit our education to the lad's needs, or the whole business will be a failure.

An endeavour is being made in this district to provide suitable instruction for men and boys who have the care of horses; and one evening last month I called on Mr. C. T. Millis, the Principal of the Borough Polytechnic, who is responsible for instituting the first farriery school in London.

It was most instructive to me to discuss the problem of continuation education with Mr. Millis, who is a whole-bogger for definite, practical, technical, purposeful instruction. He could not see the use of repeating in the evening schools instruction similar to that given in the day schools. He was convinced of the fatuity of endeavouring to fit every pupil to the course when the curriculum should be made to wait upon the needs of the pupil.

At the Herold's Institute, attached to the Bermondsey Mission, he has already inaugurated a course of lectures and demonstrations, with practical work, on the principles and practice of horse-shoeing and the care and management of the feet of the horse. These lectures are open to all who have the care of horses—such as horse-owners, carters, grooms, and drivers.

BY REPUTE CARMEN ARE AN IGNORANT CLASS.

Certainly on the road they often display pitiable ignorance of the poor brutes they drive and ill-treat; and courses such as these might be multiplied to the advantage of the horse and the horse-owner.

Arrangements are now being completed for the maintenance and equipment of a van-boys' club and classes at the Herold's Institute. The trustees of the City Parochial Charities have made a grant of £200, and the trustees of the Herold's Foundation have given £100 towards the equipment of the gymnasium, and a further sum of £50 for the maintenance of the first year.

The educational courses are sketched out, and it is proposed to give special lessons on the care and management of horses, with practical work and demonstration, for such van-boys as show aptitude for the care of horses. Mr. Millis, however, is aware that a large number of these van-boys have no taste or skill for such work; and for these, and for other lads who do not intend to become carmen and horse-keepers, a course of practical instruction is to be provided, to enable them to prepare for some other occupation, better trained than they would be otherwise.

But all these plans and preparations are held up for want of a man. The members of the committee are looking for some one with enthusiasm and special ability, as well as a very large share of benevolent hopefulness, who will undertake the management of the club and the classes. Here is pioneer work to be done; but, search as diligently as Dr. Stansfeld and Mr. Millis may, the right man is not easy to get. But they have hopes that by the time this paper appears they will have put their designs to the proof. I trust they may; and in the interest of the *Practical Teacher* readers, as well as for myself, I hope to watch the experiment closely.

A NEW COURSE OF PRACTICAL AND CONSTRUCTIVE WORK,

ARISING OUT OF AND COMBINED WITH THE ORDINARY SCHOOL SUBJECTS.

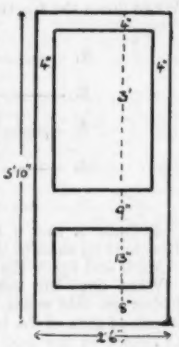
For Junior, Middle, and Upper Divisions of Primary Schools.

BY A. R. PICKLES, M.A., AND DALTON GRANGE.

LESSON 62.—(*Continued.*)

The Door.

1. Draw the door one-tenth the size.
2. What is the area of the glass panel (the top panel)?
3. The wood panel?
4. What is the area of the door?
5. What is the area of wood in the door?
6. How much more wood than glass?
7. How much longer is the perimeter of the glass panel than the perimeter of the wood panel?
8. What would the glass cost at 8 sq. in. per penny?
9. If the wood of the door is 1″ thick, what will be the area of the four edges?
10. How much would it cost to paint both sides of the door (wood only) at one penny for each 24 sq. in.?

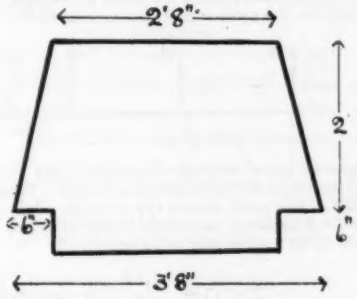


Answers.

2. 792 sq. in.
3. 286 sq. in.
4. 2,100 sq. in.
5. 1,308 sq. in.
6. 516 sq. in.
7. 46 in.
8. 8s. 3d.
9. 200 sq. in.
10. 9s. 1d.

Mosaic Pattern for Entrance.

1. Draw one-eighth the size.
2. Measure and write down the length of one of the sloping lines of the drawing.



3. What is the actual length of one of these lines?
4. Find the perimeter in yards, feet, and inches.
5. What is the area of the rectangular piece at the bottom of your drawing?
6. Find the actual area of this piece.
7. What is the area of the trapezoid you have drawn?
8. What is the actual area of the trapezoid?
9. Find the area of the drawing.
10. What is the actual area of the pattern?

Answers.

2. $3\frac{1}{8}$ in.
3. 25 in.
4. 3 yds. 2 ft. 6 in.
5. 3 sq. in.
6. 192 sq. in.
7. $14\frac{1}{4}$ sq. in.
8. $91\frac{2}{3}$ sq. in.
9. $17\frac{1}{4}$ sq. in.
10. 1,104 sq. in.

LESSON 63.—SCALES AND SCALE DRAWING.

1. Can you draw a line on your paper 5 feet long? Why not? How, then, can you show lengths greater than your paper will allow? Draw a line on your paper which shall represent 5 feet. Write below the line, "5 feet," and above, the length of the line. Now draw a line on the same scale to represent 7 feet. Divide your line into 7 parts. What will each part represent?

2. This line represents a distance of 6 inches.

Measure it. How long is it actually? Divide the line into half-inches. Into how many parts is the line divided? How many inches does this line represent? What does each half-inch represent? How many times smaller is this line than the length it represents? What fraction is this line of the length it represents? Complete it as shown.

We call this a scale of $\frac{1}{6}$, or a scale of $\frac{1}{6}$" to 1 inch.

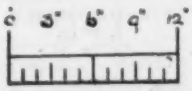
3. The following lines represent the distances written on them. Write down the fraction to represent the scale.

1. $\frac{\text{6 in.}}{\text{\_\_\_\_\_}}$
2. $\frac{\text{5 in.}}{\text{\_\_\_\_\_}}$
3. $\frac{\text{7 in.}}{\text{\_\_\_\_\_}}$
4. $\frac{\text{1 ft.}}{\text{\_\_\_\_\_}}$
5. $\frac{\text{1 ft.}}{\text{\_\_\_\_\_}}$

4. Draw a line 6 inches long. This line represents 4 feet. Divide it up so as to show feet.

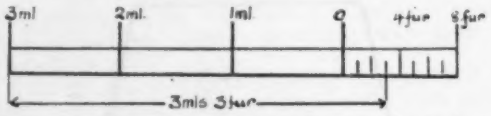
Mark and figure the feet as shown.

What does the last space represent? If we wish to show inches on this space, what must we do? What will be the length of each of the inches as shown in this space? Mark it off as shown in the next figure, and complete. Note the varying lengths of the lines showing these inches. The six-inch line is the longest, though not as long as the lines showing feet; the three-inch and nine-inch lines are shorter; while the lines for the remaining inches are the shortest. Note also the arrangement of the figures.

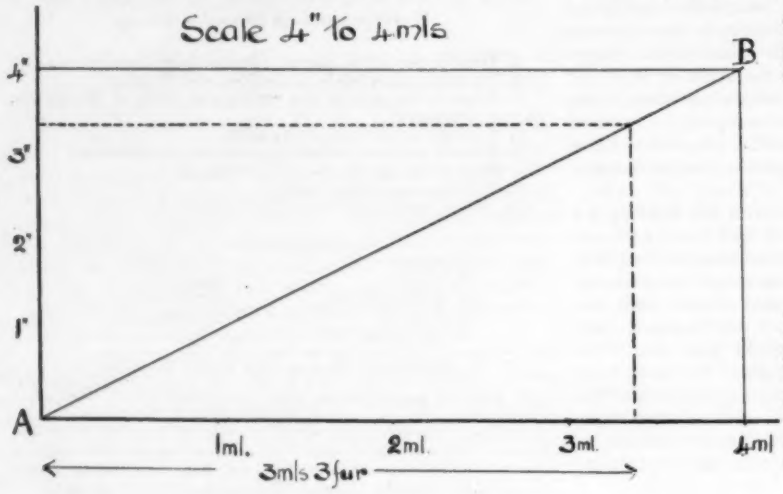


Draw a line 4 in. long. This line represents 4 miles. Draw the scale so as to show miles, and, in the last foot, furlongs. Draw a line which shall represent 3 miles 3 furlongs.

When complete the scale will appear as follows:—



5. On squared paper arrange the miles along the horizontal line and the inches on the vertical line as shown. From the 4-inch mark and the 4-mile mark obtain the point B. Join AB. Measure off 3 miles 3 furlongs, as shown in the diagram. Note that any distance up to 4 miles can be measured off.



Some Exercises.

1. Draw a scale of 1 inch to a foot, dividing the last foot to show 3 inches, 6 inches, and 9 inches. Show 4′ 3″. Write down the fraction which represents the scale.

2. The following line represents a distance of 10 feet. Draw the scale so as to show 9′ 6″. How many times less is the line in your book than the line it represents?

---

3. Draw a scale of 1½ inches to the yard, so as to show 2 yards 1 foot.

4. On squared paper plot out a line representing a scale of 2 inches to a mile. On it show 1 mile 5 furlongs.

5. On a drawing a length of a pole is shown by 2½ inches. Draw the scale to which the drawing has been made, and show a line 4½ yards long.

6. Construct a scale half an inch to a foot, and show 7′ 6″. What is the fraction representing this scale?

7. A bowling-green has a side 40 yards long. Draw this, scale $\frac{1}{10}$ inch to 1 yard. What is the actual length of the diagonal of the green?

8. Draw to any scale you think best the plan of a grass plot measuring 16 yards by 12 yards. Round the plot is a path a yard wide. Measure and write down the length of the diagonal of the drawing of the plot of grass. By its side write the fraction representing the scale to which you have made the drawing. After this fraction write the actual length of the diagonal of the grass plot.

N.B.—Questions could be given here on the perimeters and areas of the plot and path, if the teacher thinks fit.

9. Make a drawing of your drawing-board to any suitable scale. Write down the fraction representing the scale to which your drawing is made. Calculate what must be the actual length of the diagonal of your drawing-board. Check this answer by actually measuring your drawing-board.

10. A blanket measures 70 inches by 50 inches. Draw this to a scale of $\frac{1}{10}$. Measure and write down the length of the diagonal of your drawing.

Lesson 64.—Square Inch, Square Foot, Square Yard, etc.

The Square Inch.—Cut out of coloured paper—(1) a square having a side of 1 inch; (2) a rectangle having sides 2″ and ½″.

Fix these in the drawing-book, side by side.

What is the area of the square? of the rectangle? What could you call the square besides a square inch? (An inch square.) What do you mean by a square inch? an inch square? In what must the two be similar? In what may they differ?

Draw in your book a figure 2 inches square. By its side draw 2 square inches. What is the difference? What do you mean by 2 inches square? 2 square inches?

Try to draw a rectangle 2 inches square. Why can't you do it? Draw a rectangle of 2 square inches. Write inside its dimensions. Why is it a rectangle of 2 square inches?

Repeat with a 3-inch square and 3 square inches, a 4-inch square and 4 square inches.

The Square Foot.—Give each pupil a sheet of paper 14″ × 13″. Draw on your paper a square each side of which is one foot. What can you call the drawing? Why a foot square? Why a square foot? Divide the square into square inches. How many square inches are there in one square foot?

Fill in the following blanks:—

12 inches × = 1 square foot.
8 inches × = 1 square foot.
6 inches × = 1 square foot.
4 inches × = 1 square foot.
3 inches × = 1 square foot.
2 inches × = 1 square foot.
1 inch × = 1 square foot.
9 inches × = 1 square foot.

Which of these is a foot square?

The Square Yard.—This should be done in the playground or floor of hall or classroom. Pupils draw a square yard. Divide each side into feet, and then divide the whole into square feet. How many square feet in a square yard?

1. Make a drawing in your book to show that there are 9 square feet in a square yard.

2. Construct a drawing in your book

to show that a square yard is not necessarily a yard square, the sides of the drawing to represent an exact number of feet.

The Square Decimetre.—Draw on your paper a square of 1 dm. side. Divide it into square cm. How many square cm. are there in a square dm. ?

1. Reduce the following to square dm. and square cm.

(1.) 135 sq. cm.	(6.) 750 sq. cm.
(2.) 236 sq. cm.	(7.) 703 sq. cm.
(3.) 352 sq. cm.	(8.) 821 sq. cm.
(4.) 673 sq. cm.	(9.) 1,060 sq. cm.
(5.) 605 sq. cm.	(10.) 1,002 sq. cm.

2. Write the answers in square dm. and a decimal.

3. Fill in the following blanks :—

(1.) 10 cm. ×	= 1 sq. dm.
(2.) 20 cm. ×	= 1 sq. dm.
(3.) 25 cm. ×	= 1 sq. dm.
(4.) 50 cm. ×	= 1 sq. dm.

Which of these is a decimetre square ?

4. Make two drawings—

(1.) Of 5 square cm. and 5 cm. square.
(2.) Of 6 square cm. and 6 cm. square.
(3.) Of 7 square cm. and 7 cm. square.
(4.) Of 8 square cm. and 8 cm. square.

In (1) how many times is one drawing larger than the other ? In (2) how many times ? etc. Which is the larger—2 square cm. or 2 cm. square ? How many times larger ? How many times larger is 3 cm. square than 3 square cm. ?

The Square Metre.—This should be done in the playground or on floor of hall or classroom. Do it, if possible, by the side of the square yard, so that the two may be compared. Allow pupils to draw a square having a side of 10 dm. or 1 metre. Divide it into square dm. How many square dm. in a square m. ?

1. Which is the larger—a square yard or a square metre ?

2. Reduce the following to square metres :—

(1.) 356 sq. dm.	(6.) 506 sq. dm.
(2.) 307 sq. dm.	(7.) 682 sq. dm.
(3.) 416 sq. dm.	(8.) 745 sq. dm.
(4.) 470 sq. dm.	(9.) 801 sq. dm.
(5.) 593 sq. dm.	(10.) 910 sq. dm.

3. Write the above answers in square m. and a decimal.

4. Write the following in square m., square dm., square cm. :—

(1.) 23516 sq. cm.	(6.) 67314 sq. cm.
(2.) 16703 sq. cm.	(7.) 70106 sq. cm.
(3.) 20919 sq. cm.	(8.) 70009 sq. cm.
(4.) 35760 sq. cm.	(9.) 81653 sq. cm.
(5.) 43251 sq. cm.	(10.) 90300 sq. cm.

Some Questions.

1. On one side of a 2-inch line draw square inches, and on the other side 2 inches square. Write down the difference between the areas, and also the difference between the perimeters.

2. Make a drawing whose area shall be 7 square cm. Write inside its perimeter.

3. Calculate the number of square inches in a square yard.

4. A lady bought a square yard of material. The width was 18 inches; what was its length ?

5. How much must be cut off a roll of cloth 48 inches wide so that the piece cut off shall have an area of 1½ square yards ?

6. About how many square inches are equal to 1 square dm. ?

7. A building has a ground floor measuring 75 feet by 32 ft. Find its area in square yards.

8. A rhomboid has a base of 5 cm. and a height of 7½ cm. What is its area in square mm. ?

9. What would be the cost of turfing a lawn 140 feet long and 36 feet wide at ¼d. per square yard ?

10. Royal printing paper measures 25 inches by 20 inches. Express this area in square feet and square inches.

Answers.

1. 2 sq. in. ; 2 in.	6. 16 sq. in.
2. 16 cm.	7. 266⅔ sq. yds.
3. 1296 sq. in.	8. 3750 sq. mm.
4. 72 in.	9. £1, 3s. 4d.
5. 40½ in.	10. 3 sq. ft. 68 sq. in.

Lesson 65.—The Triangle.

1. Cut out of coloured paper a square of 8 cm. side. Draw a diagonal, and cut the square along this diagonal. How many sides has each of these pieces ? How many angles ? Give the name triangle. Ask for other words containing the prefix *tri-* (tripod, tricycle). What is the meaning of *tri* ? Why is the figure called a triangle ? Place one triangle exactly on the other. What do you notice ? What fraction is each triangle of the square ? Fix one of the triangles in the book. Write beside it what it is, and what fraction it is of the square. Place the remaining triangle on one side for future use.

Cut out of coloured paper a rectangle 8 cm. by 6 cm. Draw a diagonal. Cut along this diagonal. Repeat as in the previous case.

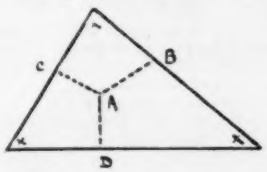
Cut out of coloured paper a rhombus of 7 cm. side, with one angle of 60°. Draw the shorter diagonal. Cut along this diagonal, and repeat as before.

Cut out of coloured paper a rhomboid 8 cm. by 7 cm., with an included angle of 45°. Draw the longer diagonal. Cut along this diagonal, and repeat as before.

2. Now take the other triangle cut from the square and fix it in the book. Complete the square by drawing two parallel lines. What is the area of the square ? of the triangle ? How do you find the area of the square ? of the triangle ?

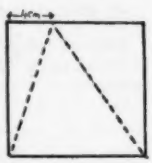
Next take the other triangle cut from the rectangle. Fix in the book. Complete the rectangle. Repeat as with the last triangle. Find the area of this triangle, taking the 6 cm. side as the base. Continue with the two remaining triangles.

3. Give each pupil a sheet of coloured paper. Draw on this with your ruler any triangle you like, and as large as you like. Cut it out. Mark each of the corners on the gummed side by means of a cross. Inside the triangle (see diagram) take a point A on the gummed side. Join this point to the points B, C, D (which are somewhere near the centre of the sides of the triangle) by means of dotted lines. Cut the triangle along these dotted lines. Fix each of these pieces so that the corners of the triangle



—that is, the marked corners—are together. What is the size in right angles of all the angles of a triangle ? in degrees ? Write these in your book.

Exercise.

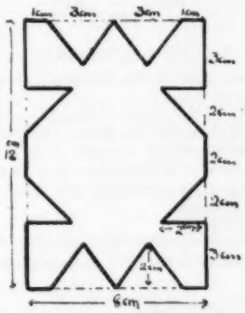


Draw a square of 12 cm. side on a sheet of coloured paper. Complete as shown in the diagram. Cut the square along the dotted lines, and fix each triangle in the book.

(*a*) What is the area of the largest triangle ?
(*b*) Find the area of the smallest triangle.
(*c*) Write down the area of the remaining triangle.
(*d*) What is the total area of the two smaller triangles ?
(*e*) What fraction is this of the area of the square ?

Exercises in Design.—The Triangle.

Draw on coloured paper, and cut out along the thick lines.



Allow pupils to fix the large piece in the book and then arrange the triangles cut out to form some original border design.

Some Questions.

1. What is the area of one of the triangles cut out of the top ?
2. What fraction is one of these triangles of the rectangle ?

3. What is the area of a triangle cut out of the side ?
4. What fraction of a long side of the rectangle remains ?
5. What fraction of the whole perimeter remains ?
6. What is the sum of all the triangles cut out ?
7. What was the area of the rectangle before the triangles were cut out ?
8. What area is left ?
9. What fraction is the sum of the four smaller triangles of the area of the original rectangle ?
10. Express the area of a smaller triangle as a fraction of the area of the larger.

Exercises on the Triangle.

This diagram is to be drawn on the *gummed* side of the paper. Then cut out along the thick lines. Fix the letter N in the book.

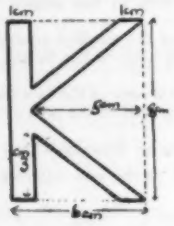
Some Questions.

1. What is the area of one of the triangles cut out ?
2. Measure and write down the length of the longest side.
3. What was the area of the rectangle previous to cutting out ?
4. What is the area of the letter N ?
5. What fraction of the rectangle is left ?
6. What is the area of the central portion of the letter N ? (Rhomboid base 1" × height 1½".)

Arrange the two triangles to form a rectangle, and fix in the book.

7. What is the area of this rectangle ?
8. What is its perimeter ?
9. Measure and write down the length of the longest side of the triangle.
10. Find the total length of the two diagonals of the rectangle.

Draw on the gummed side of some coloured paper. Cut along the thick lines. Then fix the letter in the drawing-book.



Some Questions.

1. What was the area of the rectangle from which you have cut the letter ?
2. Find the area of the largest triangle cut away.
3. Find the area of one of the small triangles.
4. What fraction is a small triangle of the whole rectangle ?
5. What is the area of all the three triangles cut away ?
6. What fraction of the rectangle has been cut away ?
7. What fraction is left ?
8. What area is left ?
9. What is the area of the upright stroke of the K ?
10. Find the area of each of the remaining parts of the K.

SPECIAL NOTICE.

Our readers are asked to note that our offer of Free Scholarships at the International Correspondence Schools no longer holds, and that fees for the introduction of new students will not be paid from this date.

AN EDUCATIONAL EXPERIMENT.

BY A. G. HORNE, MANUAL INSTRUCTOR UNDER THE EDINBURGH SCHOOL BOARD.

ATTENTION has quite recently been drawn to an exhibition held in Germany of articles made by school children from scrap materials.

The following will show that the idea is by no means new as far as our own country is concerned.

A competition of this kind was held in St. Leonard's Public School, Edinburgh, in December last. It was open to the boys of the supplementary classes, all of whom get three hours' instruction in woodwork per week.

Certain conditions were laid down for the making of the toys, which was to be done entirely by the competitor outside of school hours. No expense was to be incurred beyond 1d. for materials; but, preferably, the articles were to be made from odd and apparently useless scraps, all the toys to be the property of the school and given to a charitable institution at Christmas-time.

The results were distinctly encouraging, 27 toys being submitted. The school is situated in a working-class district; and the energy displayed, showing much expenditure of time and thought on the part of the pupils, is bound to have an educative influence very far-reaching in its results, both intellectually and morally.

The articles, as will be seen from the illustration, were of a varied and interesting character, as were the materials used in their construction, prominent among which were thin wood from old boxes, cardboard, glass, corks, nails, wire, matchboxes, cloth, beads, buttons, pins, and old bobbins.

The most popular means of decorating was by water colours, though in some cases pieces of coloured print, cloth, or paper were used as a covering.

The means of locomotion were represented by a motor car in thin wood; a biplane which would not fly, but answered obediently when pulled along the floor; and a horse and cart which gave evidence of a protracted study on the part of the maker of the methods of harnessing and yoking employed in real life.

The panorama was a veritable picture gallery, all hand-painted; and as the pictures passed in review, the spectator was shown the mighty ship ploughing its way through the surging foam, followed by views representing life aboard, all of which indicated the impression made by similar shows on the child mind.

Other toys were: a mountain slide, down which careered a little figure perched on a tape; a barrow; dolls' houses; furniture; an acrobat; yachts; building-bricks; a theatre; a fortune-telling apparatus; and a puzzle; while two representatives of the golliwog order showed that boys as well as girls can do something with the needle. It might safely be said that 2d. paid for all the material purchased for the making of the toys; and although prizes were to be awarded for the best, every boy had the incentive of doing something for the amusement of a sick child.

It was intended to judge the prize-winners in the usual way, each toy being numbered for the purpose; but as no one could be persuaded to undertake this duty, owing to the great variety of ingenuity displayed, the winners were chosen by the boys themselves.

The voting was by ballot, the electorate being confined to the competitors. After viewing the toys, each boy had to write down on his ballot-paper the numbers of those he thought best. A blackboard was requisi-

tioned, and against each number was chalked up the votes cast as they were called out by the enumerators.

The process of a second ballot was gone through to allocate the order of the winners; and it may be readily imagined that no teaching tricks or other inducements were required to rivet the attention of the boys to the blackboard.

It may be mentioned that the winners are to be allowed to choose some useful article they would like to make for themselves, such as a writing-desk or some other thing; make it in the course of their manual instruction, and take it away when finished.

The pupils decided that the toys should be sent to the Sick Children's Hospital, Edinburgh, and a letter of appreciation from the matron to Mr. Clark, the headmaster, concluded what the writer hopes will be continued as an annual event in the school.

REAL HISTORY FOR THE UPPER CLASSES.

Some of the best and most entertaining of our school histories have come from the pen of E. M. Wilmot-Buxton. *A Junior History of Great Britain* (published by Messrs. Methuen, 2s.) is no exception. In fact, it is one of the few text-books on the market dealing with real history suited to the age and capacity of the children of the upper classes of primary schools. It covers the whole gamut of English history, although it intentionally gives scanty notice to the Hanoverian period. The sovereign has not been taken as the head and fount of every historic movement and event, but Miss Buxton has wisely woven her story around the really great personalities. In every instance an appeal has been made to poetical literature for illustration, ample quotations being given.

This history is not by any manner of means a mere outline, but yet it is devoid of that pitfall of history *readers*—padding. A summary and several suggestive questions are useful adjuncts to each chapter.

Except for a few maps there are no illustrations. This may be one of the "omissions made of set purpose," but it is none the less a regrettable omission. It would also have enhanced the value of the book if the pupil had been referred to the historical novel as well as to the historical poem. But we cannot have everything; and with entire confidence we can recommend the adoption of this work as a text-book for the older children.

RURAL ARITHMETIC.

Messrs. Mills and Boon have issued *A Rural Arithmetic, including Household Accounts*, by Deakin and Humphreys. It is intended especially for pupils of continuation classes in the country, and for them it is admittedly adapted; but it might also be used with advantage in the upper classes of the day school. Its 180 pages are packed with matter and examples of a thoroughly practical and common-sense nature. Our arithmetics are usually crowded with prices and measurements which no person in his senses would think of adopting. Here it is not so. In the chapter on "Household Accounts," for instance, we have an exhaustive table of current prices, and the examples are based on these. The chapters on "Post-Office Transactions," "Length and Area," "Volume and Weight," "Values of Farm Foods," and "Fire Insurance" are equally sane. We cordially recommend the book.

Our Query Column.

SOLUTIONS BY A. CLEMENT JONES, M.A., PH.D., SENIOR MATHEMATICAL MASTER, BRADFORD GRAMMAR SCHOOL.

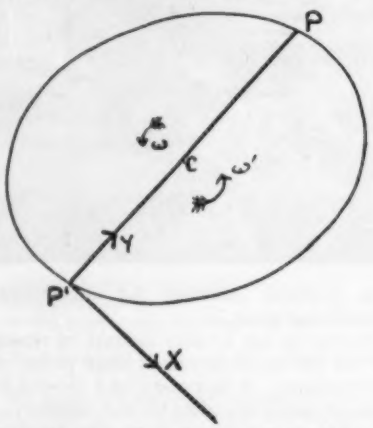
RULES.

1. Each correspondent is restricted to *one* question.
2. Each query must be accompanied by the name and address of the correspondent, and the *coupon* which appears on the back wrapper of the current number of the Journal.
3. CORRESPONDENTS MUST IN ALL CASES STATE THE SOURCE FROM WHICH THEIR QUERY HAS BEEN OBTAINED.

The Editor reserves to himself the right to decline to answer any question which is, in his judgment, unsuited to the Magazine.

H. E. E.—An elliptic disc is rotating in its plane about one end P of a diameter PP′ when P′ is suddenly fixed. Find the impulse at P′ and the angular velocity about P′, and prove that if the eccentricity exceeds $\sqrt{\frac{2}{3}}$ the diameter PP′ may be so chosen that the disc is reduced to rest.

Let CP = CP′ = r, and suppose M the mass of the disc, w and w' the angular velocity before and after. Let X be the impulse perpendicular to P′P, Y the impulse along PP′.



The angular momentum about a point P′ in space is unaltered, since this lies on the line of the resultant impulse. Hence

$$M(r^2w + k^2w') = M(-r^2w + l^2w),$$

where $$l^2 = \frac{a^2 + b^2}{4}.$$

$$\therefore \quad w' = \frac{l^2 - r^2}{l^2 + r^2} \cdot w.$$

The velocity of C before is rw, the velocity after is rw' in the opposite direction, both perpendicular to PP′.

$$\therefore \quad X = (-rw - rw')M,$$

or the impulse is in the opposite direction to that shown in the figure, and is equal to $Mr(w + w')$.

w' can be zero if $l^2 = r^2$.

Let P be the point $(a\cos\theta, b\sin\theta)$ on the ellipse; then

$$a^2 + b^2 = 4(a^2\cos^2\theta + b^2\sin^2\theta).$$

$$\therefore \quad \tan^2\theta = \frac{3a^2 - b^2}{a^2 - 3b^2} = \frac{2 + e^2}{3e^2 - 2}.$$

θ is real then if $3e^2 > 2$—that is,

$$e > \sqrt{\frac{2}{3}}.$$

Timmy.—Taylor's Theorem, and expand $\sin x \,.\, \coth x$ in powers of x as far as x^5 by Maclaurin's Theorem.

(B.Sc., London, 1910.)

The first part of your query is answered in any book on the calculus.

If $$y = \sin x \,.\, \coth x$$

$$= a_0 + \frac{a_1}{|1} \cdot x + \frac{a_2}{|2} x^2 + \frac{a_3}{|3} x^3 + \ldots$$

Then $a_0, a_1, a_2 \ldots$ are the results of putting $x = 0$ in

$$y, \frac{dy}{dx}, \frac{d^2y}{dx^2} \ldots$$

It would be difficult to devise a more unfortunate example of the use of Maclaurin's Theorem. The expansion is much more readily found thus:—

Let $\sin x \,.\, \coth x = a_0 + a_1x + a_2x^2 + a_3x^3 + \ldots$

Then $$\sin x \,.\, \coth x = \sin x \times \frac{e^x + e^{-x}}{e^x - e^{-x}}$$

$$= \frac{\left(x - \frac{x^3}{|3} + \frac{x^5}{|5}\right)\left(1 + \frac{x^2}{|2} + \frac{x^4}{|4}\right)}{x + \frac{x^3}{|3} + \frac{x^5}{|5}}.$$

Retaining only powers of x less than x^6

$$= \frac{\left(1 - \frac{x^3}{|3} + \frac{x^4}{|5}\right)\left(1 + \frac{x^2}{|2} + \frac{x^4}{|4}\right)}{1 + \frac{x^2}{|3} + \frac{x^4}{|5}}$$

$$= \left(1 + \frac{x^2}{3} - \frac{x^4}{120}\right)\left(1 - \frac{x^2}{6} + \frac{7x^4}{360}\right)$$

$$= 1 + \frac{x^2}{3} - \frac{2x^4}{45}.$$

Maths.—Show that the coefficient of a^n in the expansion of $(1 - 2ax + a^2)^{-\frac{1}{2}}$ in a series of ascending powers of a is a value of y satisfying the equation

$$(1 - x^2)\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + n(n + 1)y = 0.$$

(Board of Education, Stage VII., 1910.)

Consider the equation

$$z = x + \frac{a}{2}(z^2 - 1) \quad \ldots \ldots \quad \text{(i)}$$

Then $$az^2 - 2z + 2x - a = 0.$$

$$\therefore \quad z = \frac{1 \pm \sqrt{1 - 2ax + a^2}}{a}.$$

$$\therefore \quad z = \frac{1}{a} - \frac{1}{a}\sqrt{1 - 2ax + a^2}. \quad \ldots \quad \text{(ii)}$$

Taking the negative sign, apply Lagrange's Theorem to equation (i) to expand z in terms of a. We have

$$z = x + \frac{a}{2}(x^2 - 1) + \left(\frac{a}{2}\right)^2 \frac{1}{|2} \cdot \frac{d}{dx}(x^2 - 1)^2 + \ldots$$

$$+ \left(\frac{a}{2}\right)^n \cdot \frac{1}{|n} \cdot \frac{d^{n-1}}{dx^{n-1}}(x^2 - 1)^n + \ldots \quad \ldots \quad \text{(iii)}$$

Now differentiate (ii) and (iii) with respect to x. Then

$$\frac{dz}{dx} = (1 - 2ax + a^2)^{-\frac{1}{2}}$$

$$= 1 + \frac{a}{2} \cdot \frac{d}{dx}(x^2 - 1) + \ldots$$

$$+ \left(\frac{a}{2}\right)^n \cdot \frac{1}{|n} \cdot \frac{d^n}{dx^n}(x^2 - 1)^n + \ldots$$

Thus, if y is the coefficient of a^n in the expansion of $(1 - 2ax + a^2)^{-\frac{1}{2}}$, we have

$$y = \frac{1}{2^n|n} \cdot \frac{d^n}{dx^n}(x^2 - 1)^n.$$

Now let $$u = (x^2 - 1)^n.$$

$$\therefore \quad \frac{du}{dx} = n(x^2 - 1)^{n-1} \cdot 2x.$$

$$\therefore \quad (x^2 - 1)\frac{du}{dx} = 2nx \cdot u.$$

Apply Leibnitz's Theorem,

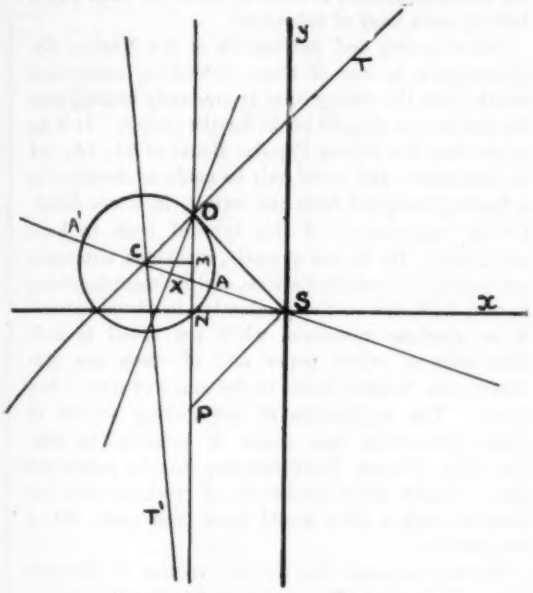
$$(x^2 - 1)\frac{d^{n+2}u}{dx^{n+2}} + (n+1) \cdot 2x \cdot \frac{d^{n+1}u}{dx^{n+1}} + (n+1)n \cdot \frac{d^nu}{dx^n}$$
$$= 2nx \cdot \frac{d^{n+1}u}{dx^{n+1}} + 2n(n+1)\frac{d^nu}{dx^n}.$$

Hence $(1 - x^2)\frac{d^{n+2}u}{dx^{n+2}} - 2x\frac{d^{n+1}u}{dx^{n+1}} + n(n+1)\frac{d^nu}{dx^n} = 0,$

and consequently

$$(1 - x^2)\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + n(n+1)y = 0.$$

François.—A hyperbola has the origin for focus, the line $y = x + 2$ for one asymptote, and the line $x = -1$ for a tangent. Construct its centre, remaining asymptote, axes, and one point on the curve. (B.Sc., London, 1910.)

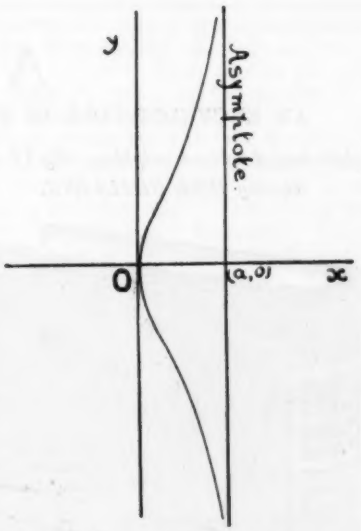


Let CT be the given asymptote. ∴ the centre lies on it. DN is the line $x + 1 = 0$, meeting the asymptote at D. It is easy to see that SD is perpendicular to the asymptote, hence D is on the directrix and auxiliary circle. N is also on the auxiliary circle; hence the centre of the auxiliary circle, and therefore of the hyperbola, lies on the intersection of MC (NM = MD), which is perpendicular to DN and the asymptote. This gives the centre C. Hence CS is the axis cutting the auxiliary circle in the vertices A and A'. DX perpendicular to this is the directrix. CT' so that ∠ SCT = ∠ SCT' is the other asymptote. Again, since D is on the directrix, if DSP is a right angle, P is the point of contact of DN—that is, is a point on the curve.

Vigging.—Find the volume of the solid formed by the revolution of the curve $(a - x)y^2 = a^2x$ about its asymptote. (Edwards's *Integ. Calc.*)

For real values of y, x must be positive and less than a; also the curve is symmetrical about the axis of x, and touches the axis of y at the origin. The asymptote is $x = a$.

$$\text{Volume} = 2\int_0^{\infty} \pi(a - x)^2 \cdot dy$$
$$= \pi a^2 \int_0^a \sqrt{\frac{a - x}{x}} \cdot dx.$$



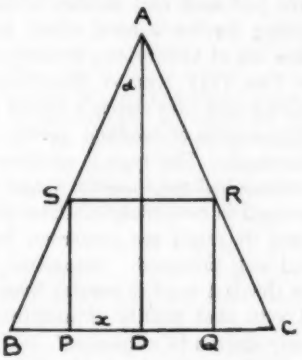
Put $x = a\sin^2\theta$. ∴ $dx = 2a\sin\theta\cos\theta$.

$$\therefore \quad = \pi a^3 \int_0^{\frac{\pi}{2}} 2\cos^2\theta\, d\theta$$
$$= \pi a^3 \int_0^{\frac{\pi}{2}} (1 + \cos 2\theta)\, d\theta$$
$$= \pi a^3 \left[\theta + \frac{\sin 2\theta}{2}\right]_0^{\frac{\pi}{2}}$$
$$= \frac{\pi^2 a^3}{2}.$$

Handsworth.—Find the cylinder of greatest volume which can be inscribed in a given cone.

Let 2α be the vertical angle of the cone, ABC a principal section, D the centre of the base. If PQRS be a section of the cylinder, and PD = x, we have

volume of cylinder = $\pi x^2 \times (AD - x\cot\alpha)$.



Thus $AD \cdot x^2 - x^3\cot\alpha$ is a maximum.

Hence $2ADx - 3x^2\cot\alpha = 0$.

∴ $x = 0$, which corresponds to a minimum,

or $x = \frac{2}{3}AD\tan\alpha$

$= \frac{2}{3}BD.$

∴ the radius of the cylinder of maximum volume is two-thirds the radius of the base of the cone.

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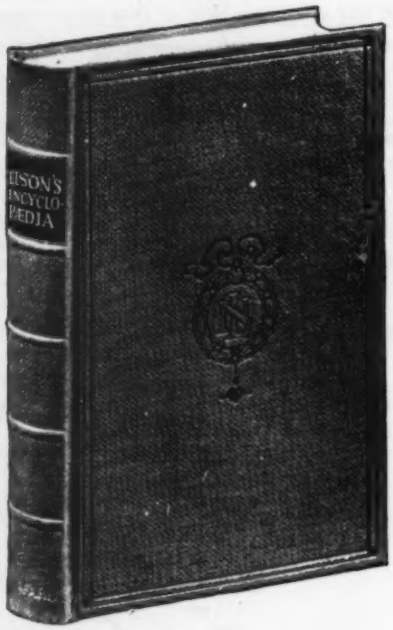


THE reference book is usually a very weighty matter indeed, and the ordinary Encyclopædia is the Gargantua of printed matter; but, thanks to Messrs. Nelson, the pioneers of what may be literally called "handy literature," we are going to change all that.

We have just seen and handled a book of pocket size, weighing twelve ounces, which is the initial volume of a set of twenty-five, forming what will be known as THE 1911 NELSON ENCYCLOPÆDIA. The book is neatly and very strongly bound in dark red cloth. The paper is of excellent quality, both in surface and strength. The type is as clear and legible as if the volume had ten times its weight avoirdupois, and is arranged in two columns. The pictorial illustrations and diagrams are numerous, helpful, interesting, and well produced. Altogether, the volume represents the last word in careful book production, combined with that quality of handiness which we have already striven to emphasise.

The publishers claim that the contents of the NELSON ENCYCLOPÆDIA are not only authoritative, but absolutely up-to-date in every respect—a matter which closely concerns all prospective buyers who are engaged in the teaching profession, and who are, therefore, desirous of obtaining information which is unimpeachable in its veracity.

The Encyclopædia itself will occupy twenty-three volumes, each of which is very clearly marked on the cover for ready reference. To complete the set of twenty-five parts an English Dictionary and an Atlas will be added, making the whole work a complete reference library for home or school use. How an up-to-date teacher would welcome such a set of books for the school bookshelf, in order to teach the older pupils how to use a book of reference!

The planning and publication of the NELSON ENCYCLOPÆDIA is one of those publishing enterprises which mark the change that is gradually coming over the production of good books for the people. It is no secret that the Nelson Popular Books at 6d., 7d., and 1s. are made—and *could* only be made so cheaply—in a Factory designed from the outset, in every detail, for the manufacture of this type of book in huge quantities. By the use of costly, ingenious, automatic machinery, by standardisation, and by manufacturing in vast bulk, the cost of production has been reduced to an absolute minimum, while the speed is such that reels of white paper and of cloth are converted into finished books in the space of only a few hours. The application of engineering science to book production has made it possible to offer the 1911 NELSON ENCYCLOPÆDIA to the public for 25s. Under older conditions of workmanship the issue at such a price would have been quite out of the question.

We are informed that the first volume of this new issue will be ready about a fortnight after the appearance of this number of the *Practical Teacher*. The volumes will appear thereafter at intervals of a fortnight, so that even the modest outlay of 25s. will not be required of any progressive teacher who wishes to replenish his bookshelf in the best possible manner. This is an arrangement which the whole profession will doubtless appreciate at its full value. For less than one penny per day the teacher can obtain this work, the production of which has necessitated the outlay of enormous capital, and enlisted the help of experts in every branch of human knowledge.

We repeat that the handiness of the volumes makes particular appeal to us. In the course of our daily work we inspect most of the volumes published in the centre of the book world, and we have often sighed for the time when *all* new books should be of the light, handy character of Messrs. Nelson's Popular Libraries; and we would, if we could, make a by-law that no volume issued from our presses should exceed twelve ounces avoirdupois.

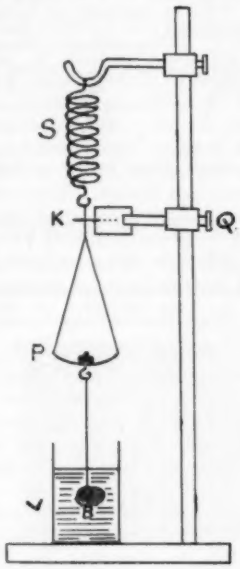
MODERN SCIENCE NOTES.

BY J. G. M°INTOSH, B.SC., SECONDARY SCHOOL, GATESHEAD.

The Principle of Buoyancy.

IN the January number of the *Practical Teacher* I described a demonstration experiment illustrating the principle of buoyancy, which has been found to give good results in the lecture-room. The following experiment has been found to work equally well in the laboratory, and possesses some advantages over the ordinary wooden bridge and balance method.

S is a small steel spring about 1½ inches to 2 inches long when not extended. These springs are conveniently made from No. 24 S.W.G. steel piano wire, and are wound by a lathe on a mandril about ⅛ inch in diameter. From the spring is hung a small pan, to the under side of which a small hook is soldered.



The body B is then fastened to the hook as indicated in the diagram, and the position of the index K registered by the adjustment of a line on a piece of cardboard supported on the stand Q. The vessel V is then gradually filled with water until B is immersed. Weights are then placed in P until the index registers its previous reading. Obviously this weight is equivalent to the upthrust of the water, and the volume of B is directly obtained. The experiment is a simple variation of Jolly's balance, is easily made, and gives very fair quantitative results. It also appeals very directly to young students.

The New Star.

The attention of astronomers is now directed to a new star which has suddenly appeared in the Milky Way, in the constellation Lacerta. The honour of discovery rests with the Rev. T. E. Espin of Towlaw, Durham, an enthusiastic astronomer. It has been kept under observation and photographed by the Astronomer Royal, Professor Dyson. It is situated in 22 h. 32 m. 10 sec. right ascension and 50° 15′ 26″ declination (N). Its present magnitude is estimated at 7·5.

The Milky Way affords many examples of these new stars. Their spectra show a strong resemblance to that of the solar chromosphere, and it is inferred that the conflagration, instead of being due to the collision of two huge bodies, is caused by the passage of the star through the nebulous matter.

Later search reveals the fact that the Nova has been photographed frequently, but remained undetected. Professor Max Wolf of Heidelberg has found it on plates taken a few years ago. It had then a magnitude of between the twelfth and thirteenth. This appears to indicate that the star belongs to the class of variables rather than that of new stars.

Apropos of the cost attached to the discovery of new stars, Professor H. H. Turner writes to the *Times* as follows :—

"I have been hoping to try some experiments on the promise of the following method. Suppose a photograph of a region of the sky put back into the same telescope which took it, in exactly the same position, and the telescope pointed in exactly the same way as in taking the photograph. Then the light of each previously existing star would focus behind its little photographic image and be obscured; but if a new star were shining, the photograph would have no corresponding image to cover it, and it would declare itself at once. I fancy this would turn out to be a feasible method; but there are many details to be considered. If we grant for a moment that these could be satisfactorily settled, the labour of searching for these new stars would still be enormous, and the slender forces at the disposal of astronomers might still be quite unequal to the continuous watch required for detecting a Nova directly it appeared."

The New Edison Cell.

The new type of Edison nickel-iron cell recently placed on the market differs from the old form in several details. The electrolyte, although still a solution of potassium hydrate, contains a little lithium hydrate, which apparently improves the working of the positives. The iron element has the greater capacity of the two, but is much the same in character as formerly. The positives used to be made up of nickel oxide and graphite, in flat rectangular pockets; but the graphite oxidised and forced out the pockets. Round tubes 4 inches long and about the diameter of an ordinary pencil are now used to retain the nickel oxide. The tubes are of steel, bound with eight steel rings. Also, in place of graphite, electro-chemically prepared flakes of pure nickel are used to increase the conductivity of the active material. Each positive holds thirty of these tubes. The negative plate comprises twenty-four flat rectangular pockets in a nickel-plated grid. The following data are given :—

	Type A-4.	Type A-6.
Rated output (amp. hours)	150	225
Average discharge voltage per cell.	1·2	1·2
Normal rates of charge and discharge (amps.)	30	45
Weight, cell complete (lb.)	13·5	19·2
Width of can (inches)	$2\frac{5}{16}$	$3\frac{1}{4}$
Breadth of can (inches)	5	5
Height of cell to top of pole (inches)	$13\frac{1}{4}$	$13\frac{1}{4}$
Required height of battery compartment (inches)	15	15

Self-forming continues for some time. The efficiency is 60 to 65 per cent., and the watt hours per pound of cell are—for the smaller type 14, and for the larger 16.

The Birmingham Cocker "Muddleplication."

An occasional correspondent of the *Birmingham Daily Post* sends to that journal a short account of a queer old arithmetic book, *A Complete System of Practical Arithmetic, with Various Branches in the Mathematics* (1783), by William Taylor, who printed and sold it at 15 Spiceal Street.

The General Plan.

The general plan may be illustrated by what Bruno would call the rule of "Muddleplication." First, the author explains the meaning of the rule. It "teacheth to increase any one number by another so often as there are units in that number by which the one is increased." Next, the members—multiplier, product, etc.—are defined, after which comes the "proof." The author quaintly tells us: "The best way to prove multiplication is by division; but as the learner is supposed not yet to know that rule, he cannot prove by it." Tables follow, and then come the rules, six of them, covering six special cases, with a number of worked examples to each case. There is a plentiful lack of problems upon which the student may exercise his own unaided intelligence.

In the days when our forebears fought duels, indulged in riots, and visited Smallbrook Street to view a main of cocks, youthful Birmingham was occupied in solving problems from Taylor's book such as the following:—

1. "I was born in the year 1751. When shall I be 49 years of age?"
2. "In the Second Book of Kings, chapter xix., we read that the angel destroyed the camp of the Assyrians, 'an hundred fourscore and five thousand.' How would you set this down?"
3. "In the year of our Lord 508 Tarquin was banished from Rome. How many years was that since, this present year being 1800?"
4. "In Egypt there was an ancient city called Babylon, which stood upon a square 15 miles each way," etc.
5. "The latitude and longitude being known, to rectify the globe fit for use."
6. "What is the difference of longitude between Rome and Constantinople?"
7. "Required the Antæci, Periæci, and Antipodes to London, whose latitude is 50° 30′ north."
8. "To find the cosmical rising and setting of the stars in any latitude."

These last four problems are relics of the "use of the globes."

Some Curious Problems.

The work of artificers—bricklayers, carpenters, painters, etc.—has due attention in this practical arithmetic.

"Suppose the ball at the top of St. Paul's Church is 6 feet in diameter, what did the gilding of it cost at 3½d. per square inch?"

"Suppose that in a room where two men, A and B, are sitting, there is a fire from which A is 3 feet and B 6 feet distant. It is required to find how much hotter it is at A's seat than at B's."

This question must be first philosophically considered, we are told.

> "If twenty dogs, for thirty groats,
> Go forty weeks to grass,
> How many hounds, for sixty crowns,
> May winter in that place?"

When we learn that "to winter" means to pass twelve weeks, the sum becomes quite clear.

THE "GROUPED REGISTERS" IN TECHNICAL AND EVENING SCHOOLS.

BY ALBERT M'LEAN.

FORM IV. for the property owner, Form L1 for the publican, and Form 6T for the teacher! Recent legislation seems to show that red-tapeism in Government offices is Form-mad.

Vested interests in the case of the first two are crying out that they are impossible to understand or fill up; but what of the last?

"Form IV. is a fool to Form 6T," so said an official to me recently; "and it is a good job it has been issued to people who have some pretence to education, otherwise I don't know what would have been the result."

Teachers, officials, and associations all over the country are complaining, and there must be something wrong with the Department's latest creation to cause such a wild and unanimous outburst.

What, then, are the objections to this remarkable system of registration? To begin with, I think the main objection is that it places an obstacle—and a serious obstacle, too—in the way of *freedom of classification*. I well remember a time, some twelve or fifteen years ago, when the policy of the Board of Education veered round in the direction of liberty. They said, Place a boy in the standard or class that his attainments fit him for. If, for example, he is fit for Standard VI. arithmetic, put him in Standard VI. On the other hand, if his reading is backward, and he is only fit for Standard V., put him in Standard V. for this subject. A sensible arrangement, too, I should say.

The policy of the Board of late years has been to stereotype education, especially technical education.

Formation of grouped courses, the limitation to subjects composing these, and the similarity of the various grouped courses all over the country, point to some central figure who is moulding the policy of the Board in the direction of uniformity—a uniformity which is very binding on the students, and a uniformity which the students or parents, and sometimes the employers, do not see the necessity for. The students, especially those over eighteen, resent this inquisition. They are getting tired of: "You cannot take this, you cannot take that; you must take this, you must take that; you cannot take this unless you take that," and so on.

The Board seem to have lost sight of the various circumstances and local conditions in active opposition to any well-defined system applied to the country as a whole. They are so full of the prospects, in the near future, of compulsory evening schools that they are apt to assume the conditions for such compulsion have arrived ahead of any legislation on the subject. They forget that the question of "working overtime" in industrial centres, for example, stands in the way of any uniform system of evening school education.

The grouped register is so simple that its simplicity makes it unworkable. Certain subjects—usually three—form the constituent parts of the grouped courses, and these are usually spread over three evenings a week. The students, following a particular grouped course, are supposed to be able to attend on the three particular evenings of the week when the course is held, and be at the same stage of proficiency in each of the subjects composing the course. This is, I say, ridiculous.

Exactly fitting the new "Suggestions."

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Let me say here, I am strongly in favour of a student taking a grouped course of co-ordinated subjects having a distinct bearing on his occupation or intended occupation; and if a student does this, I think that is enough. So long as he takes an approved course he should be allowed, if facilities in the school admit of it, to take his subjects on the evenings that fall in best with his private arrangements, and in the stages most in accordance with his previous attainments.

Of course, in a small school the difficulty is not so great, as the number of classes in any particular subject or stage of subject is necessarily limited. The students must then take what is offered, and make the best of it. But what of a large institution of over 1,200 students, similar to the one of which I have the oversight?

Here I can offer, for example, elementary classes in French every evening in the week; elementary classes in shorthand every evening in the week. Now, with such facilities, why should I bind an elementary student down to any particular night when I can offer him so much choice? "Freedom of classification" has been a battle-cry of all grades of teachers for the last decade, and this freedom must not be given up lightly.

The grouped register bears evidence of having been ill conceived and hastily drawn up, without any serious thought as to its practical application. For instance, the certificate on the front page has been copied word for word from the certificate on the front page of the class register, and can only be applied to the grouped register in the rare case of the same teacher having charge of all the subjects composing the course. Again, the object of the head-teacher's signature is open to various interpretations. Is his signature here a counter-signature to the accuracy of the registration of the class-teacher who signs the certificate? or, on the other hand, is it simply a formal signature intimating to the Board the name of the person responsible for supervising registration? If the former, I say no person can conscientiously sign that certificate.

The grouped register places obstacles in the way of transfers from one class to another. This, in my opinion, ought to be encouraged in certain cases, not discouraged. You have a student who, either through exceptional ability or on account of the time he has been able to devote to his study, is much in advance of the class, and quite fit to transfer to a higher class. He ought to be transferred, and the Board say so; but they penalise the school if he is transferred, by counting him twice over for the purpose of that wonderful calculation that is made at the foot of the register for ascertaining the attendance percentage. As a matter of fact, the student's possible hours *double* if he is transferred. The "percentage of attendance" calculation assumes that all students join the class at the *commencement* of the session, and remain in the same class *to the end* of the session. Again, how ridiculous it is to reckon the possible hours of a student who joins, say, in the New Year 1911, as from the opening of the session in September 1910!

We all know the cynic who says there are three kinds of lies—"lies, d——d lies, and statistics." Now, if it is necessary to have statistics, there is no reason why they should not be accurate, if they can be got accurately; and it is quite simple for the details at the foot of the register to be worked out accurately, and so give a reliable percentage instead of a fictitious one.

So far I have dealt with the teacher's point of view, but what of the official responsible for all the clerical work? The grouped register is, in effect, an attendance return summarised month by month—a return multiplying considerably a return previously made at the end of the session, which was too bulky for the benefits to be got out of it. I don't mind clerical work or statistics if some tangible result is going to accrue for the labour involved. The only reason I can give for this monthly summary of all the class registers is so that H.M. Inspector at his visit may see at a glance how the students of a particular course are attending that course *as a whole*. If that is the only object—and I have no reason to doubt it—then all I can say is that this can be easily verified by the inspector comparing the various registers of the course without all this ink and temper being spilled. The Board of Education will tell us—and, as a matter of fact, do tell us—that all this legislation is in the direction of improved attendance in evening schools; but my practical experience teaches me that the only way we can improve attendance is by obtaining from the employer better facilities for the attendance of their employees; and, when this is obtained, see that the students are taught by the best qualified teachers an Authority can obtain. Close co-operation amongst students, teachers, and employers will do more for improved attendance than scientific theorising at Whitehall in elaborate clerical work will ever accomplish.

The grouped register is ill thought out, and will not help, but on the other hand retard, the object for which it has been issued; and such being the case, it ought to be withdrawn at the earliest opportunity.

"CAREERS FOR MEN, WOMEN, AND CHILDREN."

PERHAPS the most important problem which confronts every girl or boy, man or woman—save the comparative few who are born to assured incomes—is the choice of a career. It is a problem which has to be solved by every one, and upon the correctness of their solutions much—indeed, practically all—of their pleasure and happiness in life depends. Yet even in these days, when so much is written about almost every conceivable subject, it is a singular fact that this most vital subject—the choice of a career for the future—has been almost totally neglected.

Realising this, Messrs. George Newnes, Ltd., are issuing, in fortnightly parts at 7d. net each, a most valuable and instructive work, entitled *Careers for Men, Women, and Children*, in which an earnest attempt is being made to compile a standard guide to employments on the widest possible basis, and to provide a bird's-eye view of the entire labour field.

For the first time, in *Careers for Men, Women, and Children*, a work is being issued which gives not only an alphabetical list of opportunities existing in over 750 different professions—including the public services, the arts, crafts, trades, etc.—but, in addition, gives in detail the essential particulars bearing on the preparation for each employment, the cost of preparation, the length of time necessary for training, together with a reasonable estimate of the prospects in each case.

Careers for Men, Women, and Children is a work that we cordially recommend to the thoughtful attention of our readers, as supplying an undoubted need, and as being of intense interest and of incalculable value, alike to parents anxious about their children's future well-being, and to every young man or woman who is desirous of getting on in the world and of occupying at some time or other a lucrative and honourable position in the world of business. The first part of the work lies before us, and makes interesting reading, even for those whose career is already settled. We hope to give further attention to this serial issue in a later number.

Crane and Sons, Ltd., of Scotland Road, Liverpool, have just issued a new list entitled *The Evolution of the Pianoforte*, in which are depicted all the principal musical instruments which have preceded the pianoforte as far back as three thousand five hundred years ago. This list should prove an invaluable aid to teachers when giving object lessons to demonstrate to pupils the wonderful progress that has been made in pianoforte construction. Copies of the list can be had free by sending a postcard.

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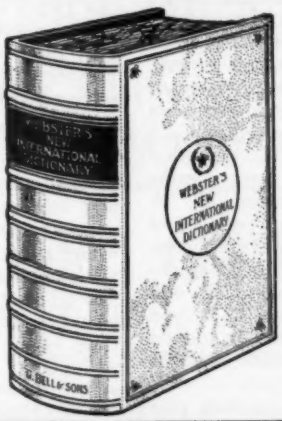

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N.U.T. NOTES.

BY ALLEN CROFT.

The Executive's Statement—

WHEN, within a few days of the memorable Plymouth Conference of 1910, the Board of Education startled a waiting world with the astounding dictum that not only was there practically *no* unemployment amongst certificated teachers, but that there was a grave "risk of there not being in a very few years' time sufficient qualified teachers for our elementary schools," many a man who had heard (or read) the figures I produced on the Conference platform must have rubbed his eyes and wondered whether he was dreaming or not. Over six months have elapsed since the issue of the Board's report, during which still further inquiries have been prosecuted by the Union, and the newly-certificated teachers have established a most active and vigorous committee for the express purpose of concentrating public attention on their lamentable plight. More than three months ago the executive agreed to the publication of "A Statement and a Criticism" on the whole subject of "Certificated Teachers—Supply and Demand." Various circumstances (including a General Election) delayed its issue for a considerable time, but at the end of January a sixteen-paged brochure was sent out to members of Parliament, secretaries of Local Education Authorities, the Press, and Local Associations throughout the country. The "argument" runs thus:—

1. In the year 1907 the Board of Education predicted a dearth of certificated teachers in 1909.
2. This forecast was founded on unjustifiable assumptions and inaccurate data, and in 1909 was disproved.
3. Inquiries by the N.U.T. in 1908 and 1909.
4. In 1910 the Board of Education practically denied unemployment, and again predicted insufficient supply.
5. Over-supply demonstrated by N.U.T. and other inquiries.
6. Over-supply prejudicial to collegiate training.
7. What over-supply means to the teacher.
8. What over-supply means to the taxpayer and ratepayer.
9. Disappointment of parents, injury to candidates, degradation of the profession, wastage of public funds.
10. Supply should bear a rational relationship to demand where both are controlled by the State at the cost of the community.

* * *

—On "Supply and Demand."

A MORE trenchant criticism of the methods of the Gallios of Whitehall has rarely been penned, and probably *sometime* during the twentieth century supineness will cease to be a characteristic of the Government department controlling the destinies of the members of what *ought* to be a great profession. I am delighted to learn from the secretary of the Union's Education Committee that already a great demand has arisen amongst Education Authorities' officials for additional copies of the memorandum; and up to the time of writing this "note" but one Local Education Authority secretary has questioned the over-supply—oddly enough because his Authority are unable to obtain certificated teachers who can speak Welsh!—although he has been in communication with the secretary of the Unemployed Teachers' Committee. Meanwhile, readers of the *Practical Teacher* will readily grasp the significance of the following paragraph from page 13 of the memorandum:—

> "Inquiries have elicited the following facts: *Out of the* 6,000 *students who left college July* 1910, *the names and addresses of* 3,488 *were obtained, and it was ascertained that of these* 1,314 *had secured appointments, and no less than* 1,434 *were still unemployed in November* 1910; *the remainder gave no information.*"

Unless the present sincere and earnest President of the Board of Education speedily announces his plans for terminating a gross public scandal, it is evident that the "Warning to Parents" circular—which apparently made him somewhat angry last year—will have to be reissued, with up-to-date information.

A POSTHUMOUS VOLUME.

MESSRS. CHARLES GRIFFIN AND CO. have sent us the first volume of their *Elementary Text-Book of Physics*, which is from the pen of the late Dr. R. Wallace Stewart, whose sudden death soon after the completion of his work aroused the sympathy of all earnest educationists. The initial volume of this text-book has been published last, and we have already drawn attention to the other three parts, which deal in a simple and lucid manner with Sound, Light, and Heat respectively. The present volume treats of General Physics, and combines all the excellent qualities of the rest of the work. It is well arranged, succinctly expressed, and provided with a large number of fresh and really interesting diagrams, unlike the usual illustrations supplied in books of this class. The volume is evidently the work of a practical teacher, and as such will commend itself to all our readers, and especially to those who are preparing for the various university examinations.

FOR LOVERS OF THE FINE ARTS.

MESSRS. JACK announce the issue of the first volume of a new *History of Painting*. The author is Mr. Haldane Macfall, and there will be a preface by Mr. Frank Brangwyn. The work will cover the entire field, beginning with the Renaissance in Central Italy and Venice, and proceeding thence to the Spanish, German, Flemish, Dutch, and French schools, bringing the narrative down to the British period ending with modern art. "The development will," as the prospectus says, "be followed from stage to stage, so that even the man who calls himself non-artistic may be led to grasp the meaning of modern painting, with all that it stands for, all that it embraces, and all that has helped to make it what it is to-day." This important work, which will fill a distinct place in art literature, will be made further attractive by a series of no fewer than 200 illustrations of great paintings in their actual colours. The book will be handsomely produced in eight volumes, and the price will be such as to bring it within the range of a large circle of readers.

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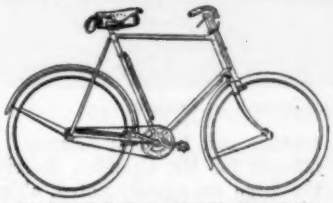

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The Editor's Bookshelf.

"NATURE'S HOLY LAND."*

MR. JULIAN GRANDE has produced a guidebook which stands without a rival. So far no guide yet issued has dealt adequately with the summer and winter seasons in the Alps. This treats of both, fully and completely. Every winter resort is mentioned, and every particular is given concerning hotel tariffs, ice-rinks, and sports. Most guidebooks contain a good deal too much information; and great as the value of such encyclopædic detail may be, immense labour is often necessary before a tithe of the substance can be assimilated.

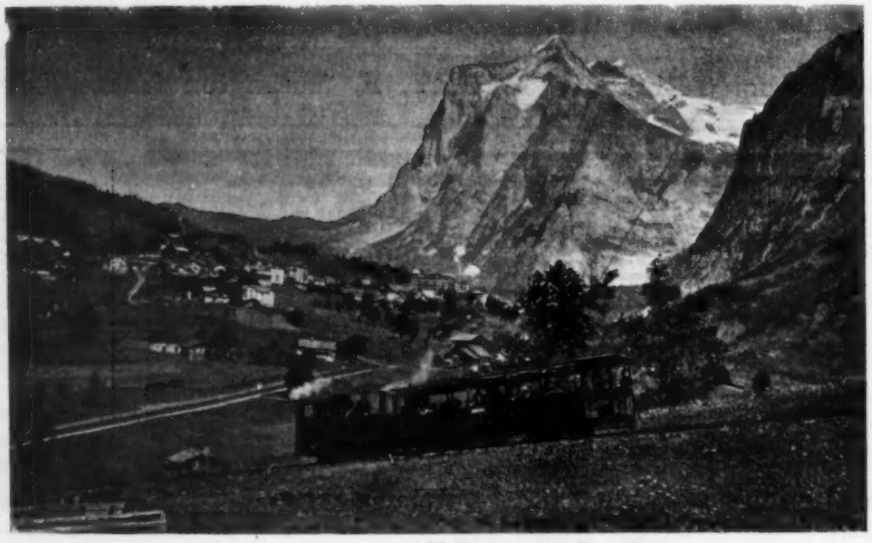
Here we have a book of modest proportions, the chief characteristic of which is the personal note of the editor's actual experience. Mr. Grande has for years past lived in the Alps, and is a successful climber of wide experience, who has advice and help to offer of the greatest possible value.

When one reads the vivid description of his ascent of the Schreckhorn in winter, one is seized with a burning desire for holiday; and one seeks for the few golden sovereigns that may be available, an old hat, a tweed suit, ice-axe, etc., and forthwith, heigh-ho! for the Oberland. Full of courage, the would-be climber says, with George Eliot: "I accept the peril. I choose to walk high with sublimer dread, rather than crawl in safety."

It is just here that Mr. Grande appears on the scene as our guardian angel. He tells us of the delights of ascent in summer and in winter; but, at the same time, advice is at hand down to the minutest detail. He will expatiate on the glories of the climb—the rocks, the glacier, the powdery snow—and generally on the strenuous work ahead; but he is ever at one's side in time of difficulty and danger, to indicate how all reasonable precautions may be taken against accident.

The information is not confined alone to climbing. There are the innumerable walks by mountain paths, steep and otherwise. These paths, too, have been traversed by the editor, carefully verified, and marked out clearly on the many beautiful maps specially arranged for this guide. Those who have tramped the paths on the forest slopes will appreciate the value of such guidance.

At the moment of writing we are looking at the map of the Lake of Brienz, and here we recall a charming spot on the south side of the lake—Iseltwald. Those who have had the joy of gliding past the pretty landing-stage in one of the lake steamers will recall the miles of forest on the mountain-side, and how, perhaps, they may have wondered over the possibilities of exploring this veritable paradise. Here the editor is at hand with his map, affording every help to the tourist who would land at the spot so aptly described as the "pearl of the lake." Here one may enjoy without limit the pleasures of solitude and heavenly scenery. No spot is too insignificant for Mr. Grande's description. The small and the large are equally noted, although some forgiveness may be necessary for the description of Interlaken as "a sort of Clapham Junction of the Oberland." Our readers will realise what the editor means, but will know that he doesn't mean what he says.



GRINDELWALD AND THE WETTERHORN IN SUMMER.

The guide contains extremely useful notes not only on both seasons in the Bernese Oberland, but for both sexes of travellers—for example, expenses, hotels, the most complete and illustrated information relative to men's and ladies' Alpine outfit, general equipment for climbers and travellers, provisions in the mountain, skates and skating, Alpine guides, etc.

Again, there are special contributions by well-known experts, such as "How the Oberland came to Berne,"

* *The Bernese Oberland in Summer and Winter.* By Julian Grande. T. Nelson and Sons. Price 3s. 6d. net.

To All Teachers

Clause I. of the Education (Choice of Employment) Act, 1910, says:

1.—(1) The powers conferred upon the councils of counties and county boroughs as local education authorities under section two of the Education Act, 1902 (in this Act called the principal Act), shall include a power to make arrangements, subject to the approval of the Board of Education, for giving to boys and girls under seventeen years of age assistance with respect to the choice of suitable employment, by means of the collection and the communication of information and the furnishing of advice.

Power of certain local education authorities to give assistance with respect to choice of employment. 7 Edw. 7. c. 42.

(2) The council of a [illegible] and the [illegible] county [illegible]

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by the Rev. W. A. B. Coolidge; "The Oberland in Ancient and Modern Times," by Hartmann; "Manners and Customs," by the Grindelwald pastor, Gottfried Strasser; "Geology and Topography," by Dr. Jenzer of Berne; a beautifully written chapter by Miss Barnicoat (the first lady to ascend the Schreckhorn in 1911) on "Wild Flowers;" and some notes by the editor on "Beasts and Birds of the Oberland."

The plan of the book is in nine divisions, equally serviceable to walker or climber. In addition there are several alluring illustrations and a good number of cleverly-arranged maps—alone worth double the price of the volume.

It is important to note that this is not a general guide to Switzerland, but a complete guide to the Bernese Oberland—the magnificent highland district described by Byron as containing "some of the noblest views in the world."

Intending summer or winter tourists should possess the volume. Needless to say, it is suitably got up, and may be easily slipped into the pocket.

SHALL WE SCRAP OUR SCHOOL PRACTICE?

'TIS a long day since I found delight in reading Miss Dodd's *Introduction to the Herbartian System* and there and then pronounced myself a "Doddite." Later, the same author's *The Child and the Curriculum* and *Nature Study and Fairy Tales* confirmed my faith and decided my school ideals.

In these latter days Dr. Hayward (Inspector of Schools under the L.C.C.) has dispelled—for me, at any rate—any misgivings felt as to the soundness of the Doddite doctrine. Recently he has published two works—*The Primary Curriculum* and *Day and Evening Schools**—which can only deserve the title of remarkable from the courageous way in which he criticises the aims and methods which find favour to-day, and from the unusual ideals and practices he proposes to replace them.

He sets before us all the idols which we have been accustomed to worship—idols of shadowy psychology, idols of catchy school-method phrases, idols of discipline, idols of curriculum, idols of organisation—and he shatters for us all our faith.

But he does not leave us comfortless. He shows us always a better way—something substantial as an ideal, and something tangible to work upon.

Shades of Gladman! How he smashes the faculty doctrine! Do we not continue to teach Nature study to train Observation, and recitation to cultivate the Memory? But Dr. Hayward, true to the Herbartian school, will have none of these. Not that he despises observation or discounts the value of memory. Rather does he seek to show us a more comprehensive way of looking at the business. He is scathing in his attack upon the "object lesson" of the chalk, coal, and leather type; and when we have read the chapter on "Observation" we shall determine to sin no more.

He tackles the thorny question of religious instruction boldly and suggestively. If only he had written the second chapter of *The Primary Curriculum* he would have done well. He throws dogma overboard, but he holds tight to religion. "If by means of hymns, attitudes, solemn silences, a suitable ritual, and the like, any sense of the greatness and mystery of the universe can be conveyed to the child, so that he may be preserved from a gray, material, complacent view of existence..... then the school must, and will, undertake the task."

Dr. Hayward expresses "whole-hearted sympathy with the retention of the Bible in schools;" but that "is not to express agreement with the methods commonly adopted." Yet "by means of proper pedagogical methods the Bible can be made actually fascinating." Just so! The Scripture lesson has never been exploited to its fullest extent; but our author goes on to show how fascinating and absorbing a course of lessons may be dealing with the books of Amos and Isaiah.

Two defects in our methods and our material he emphasises. "The truth is, that to make our Biblical instruction effective we want copious knowledge of geography, history, archæology, and criticism." "The Bible, albeit the greatest book, is also the worst arranged, worst printed, and worst illustrated book in the world." The defects *can* be remedied; but methinks even Dr. Hayward is not very optimistic, for he adds: "Even with our badly-arranged Bible we could have done something *if we had tried*."

In the sixth chapter of his second volume we are carried a little further along the same road. "Moral and religious instruction in every existent type of school.....is, on the whole, too dull and bloodless to satisfy any serious and thoughtful educationist."

He desires to institute a school ritual consisting of hymns, each of which "typifies some eternal fact of human nature, or recalls some great episode or great personality;" and "songs, chosen with a deliberateness, with an eye for appropriateness, system, and completeness, of which none of our schools and churches have at present any notion;" and "a ritual of selected passages.....from all the literature of the world, secular as well as sacred." "In addition.....there will be a series of ceremonial acts and movements." "Types of fine character, far from 'saintly' in the narrow sense, will be canonised by the education of the future."

This bright and fresh treatment of the isolated and neglected religious sense is typical of all that Dr. Hayward has written in these volumes.

Of course he is an idealist. Many will say that he desires to attempt the impossible; but that I cannot admit, for he endeavours to lift school-keeping high out of its nineteenth-century rut. And if he does dream dreams and see visions, even then it will be worth while.

> "If, living on earth, we dream of heaven,
> Why, then, I hold it better to dream."

But I must come back to earth, for Dr. Hayward plans both for livelihood and for leisure. My readers must get these books for themselves. What is said therein is not always right. The facts are sometimes faulty; the first volume is scrappy in places—where Dr. Hayward calls in the specialist—but, take them all in all, they are an inspiration.

In the first volume the author himself gives a masterly treatment of the possibilities of civics, literature, history, natural science, and the language arts—special writers dealing with other parts of the curriculum. For one so imbued with the Herbartian spirit this dissected treatment seems strange. To appeal for a correlated system circling round the knowledge-subjects, and at the same time to give us the diversity and divergence consequent upon having a round dozen of authorities in the same book, is something of a paradox. But I

* *The Primary Curriculum*, 462 pp., 4s. net; *Day and Evening Schools*, 615 pp., 5s. net. (Ralph, Holland, and Co.)

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THE ENTRANCING AGE OF YOUTH.

IT is Friday night, and the end of a more than usually exacting week; but here I am, after spending the evening in a close study of Dr. Slaughter's first publication in book form,* rejuvenated, full of ideas, set a-thinking, for he has crystallised and generalised just those feelings, instincts, and emotions which I and others of my kind felt in the days of our youth.

In briefer—and perhaps more readable—form Dr. Slaughter outlines similar ideas to those we have seen in *Adolescence* and *Youth and Education*, the classic works of Dr. Stanley Hall, whose disciple our author confesses himself to be.

Professor J. J. Findlay graces the work with an introduction, which "serves the purpose of a signed review." Says he: "Here is a good thing; give it your attention." I took his advice; and feeling no regret for my decision, pass on the hint to my readers.

For Dr. Slaughter adolescence is the golden age; yet experience causes one to doubt whether "the course of human life may be figured roughly as a trajectory." May not each age have its ideal, its stimulus, pushing us onward and upward? But then Dr. Slaughter is of opinion that adult experience has been a stumbling-block in the way of youth endeavouring to discover himself. "Extraordinary achievement nearly always depends upon youthful initiative. The humdrum business of life is better in the hands of the middle-aged, who have become the slaves of their habits.....It is possible that the inclined plane of life is in the wrong direction, and that youth should begin at the top and descend in proportion to the decay of powers.....After all, the boasted wisdom of older people does not imply clearness of insight, but is, in last analysis, little more than the record of their own failures."

After reading the chapter on "Growth," you will be inclined to consign your *Physical Education Handbook* to the flames and seek for physical salvation in free play. But in our urban districts the cry will be vain. For our secondary and public school boys we provide ample playing fields, but the vast majority of our youths must continue to utilise the back streets. Our present systems are scathingly condemned. "Could the proverbial visitor from another planet arrive in a modern centre of civilisation, one of the most amusing spectacles provided for his entertainment would be the array of men, women, boys, girls, and even infants, arranged in rows and making absurd movements at the command of a leader, all in the belief, unconsciously accepted, that this fulfils the appointed task of a human body..... The present unlicensed employment of formal exercises for all stages of growth constitutes one of the greatest dangers of the times."

Then we pass to the consideration of the instincts and emotions. Adolescence is the time for ideals and hero-worship. There is abounding hopefulness in these days, "when every prospect pleases." Imagination returns in greater strength, and "the chief value of great men is to fertilise the imagination of adolescents." How true we know it to be that "all adolescents are poets by nature, and nearly all attempt at some time to express themselves in verses. Such verses are seldom examples of technical excellence, and are treated by adults with withering cynicism.....And creative impulse, possibly of a high order, is again sacrificed to the self-sufficiency of adults." I dread to think of the consequences of allowing free rein to all our budding poets, but in principle, doubtless, Dr. Slaughter is right. Older folk lack sympathy with youths, and desire to impose on them restrictions and customs suited to more advanced years.

The adult, too, believing "that no encouragement should be given to what is believed to be overdevelopment of sentimentality," stops the natural flow of feeling, which then finds outlet in some pernicious direction. These mistaken notions and misguided efforts are at the root of a host of our social evils. Is it not time that we checked our endeavours to thwart Nature? We do it all along the line. We scoff at the natural sentimentality of the youth, but we endeavour to impose it on the child. "In civilised life children are never permitted to forget that they are boys and girls—a distinction imposed by ignorant elders, who endeavour in all ways to make children adults before their time. Many seem to find something charming in the sweet-hearting of children, and encourage them in loverlike practices."

I must pass over several interesting chapters—"Scepticism," "Unification," "Pathology and Hygiene," "Juvenile Crime"—and consider the question of "Education during Adolescence." Classics and "the arid type of science" are condemned; for "nothing should be admitted to the curriculum until it is proved to be worth while, because there is all too much to learn and all too little time in which to learn it."

And then there is a wholesale tilt at scholarships and scholarship examinations. "The teacher should realise that his responsibility is to the child and not to any conventional system or set of ideas, and that his work is to be estimated finally in terms of the human product, and not in terms of place or examination lists.....The boards displaying the names of scholarship winners are pointed out with towering pride. A more enlightened generation will regard them as a record of offences demanding condemnation."

Concerning the adolescent girl there is a useful chapter, thus concluding: "The most useful suggestion at present possible is that her education should be generic rather than specialised—of the heart as much as of the head, of appreciation as much as of knowledge. Whatever further developments may take place, they must be adjusted to the central fact of woman's life—that of motherhood."

We are all seeking a solution to this problem of adolescent training, and Dr. Slaughter has materially helped us along the road; but he reminds us that "the most difficult lesson to learn as regards adolescent education—as, indeed, in all other departments—is that of knowing when to refrain from interference."

* *The Adolescent.* By J. W. Slaughter. With an introduction by J. J. Findlay. (Swan Sonnenschein and Co. 2s. 6d.)

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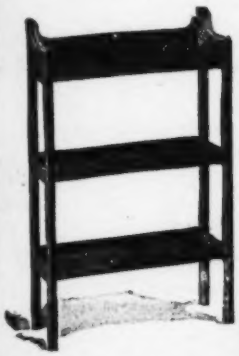

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